D.J. Greathead

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Vol. 5

THE GENERA OF THE MYMARIDAE
HYMENOPTERA: CHALCIDOIDEA

by

D. P. ANNECKE
Division of Entomology, Pretoria

and

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Department of Biological Control,
University of California, Albany, California

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INTRODUCTION

The parasitic wasps which comprise the cosmopolitan chalcidoid family Mymaridae are among the smallest of all insects, for the combined lengths of three, or even four, adult individuals may not even equal one millimetre. They are surprisingly abundant, and it is probable that a few sweeps of a net through vegetation in almost any part of the world will be sufficient to capture representatives of the group. Suction traps have accounted for great numbers of these tiny insects and they have been captured at altitudes of 5,000 feet by trapping devices attached to aircraft (Glick, 1939). They have been found throughout the tropical and temperate latitudes and as far north as Point Barrow, Alaska, the northernmost point of land on the American continent.

As far as is known they are all internal, primary parasites in insect eggs; the literature contains numerous references which would indicate that they may parasitize other developmental stages of insects, but all these are regarded with suspicion. While their value as control agents is not yet fully understood, there is evidence which indicates that they may be more important than has generally been appreciated. In the United States they have been used in projects to control such pests as the alfalfa weevil, *Hypera postica* (Gyllenhal), the sugar cane leafhopper, *Perkinsiella saccharicida* Kirk., and the sugar beet leafhopper, *Circulifer tenellus* (Baker). The effective suppression of the eucalyptus snout-beetle, *Gonipterus scutellatus* Gyll., on the subcontinent of southern Africa by the introduction of *Patasson nitens* (Girault) is probably one of the very best demonstrations of the biological control method (Tooke, 1955).

In spite of their abundance and economic importance, the Mymaridae are not well known. Their small size has hindered taxonomic work because they can be studied properly only if one has access to good microscopic equipment. Their size has also precluded their preservation in most entomological collections, and accordingly it is seldom that a museum will have more than a few, if any, specimens. However, they have been studied by a few workers during the past 130 years, and as a result, there are now catalogued, including synonymous forms, more than 130 genera and about 1,100 species. The present study deals with the literature published up to the end of 1959.

The authors have collected mymarids in Africa, in the United States and in the Pacific basin. From other persons they have succeeded in obtaining material from South America, Europe, the Middle East and the Orient. Moreover, through the kindness of the authorities of the United States National Museum and the British Museum, one of the authors (D.P.A.) has been able to study the valuable material housed in these collections. These collections are referred to as the USNM collection and the BM collection in the following pages. Also available to the authors is practically all the pertinent literature, and it was therefore decided to make use of this opportunity to attempt the accompanying analysis of the genera of the Mymaridae. All the genera have not been seen and the authors may consequently be in error in some of their concepts. This may most readily become apparent in the key which, the authors are fully aware, is not perfected. However, they have attempted to present the results of their study in such a way that subsequent, more critical and more able workers may follow their reasoning and detect where they have gone astray.

In their key the authors have also attempted to set forth the higher categories of subfamilies and tribes. They regard the nature of the abdominal attachment to the thorax to be of fundamental significance and therefore use it to divide the family into two rather unequal subfamilies which they believe reflect, to some extent at least, the probable polyphyletic origin of the family. The number of tarsal segments is probably of less phylogenetic significance but the authors have found it useful in separating tribes.

It will be noticed in this paper that generic names have been credited to the authors of the original published articles in which such generic names appear. Accordingly, Francis Walker is credited with such genera as *Caraphractus*, *Lymaenon* and *Arescon*, and J. O. Westwood is credited with *Alaptus*, since so far as the present authors are aware these workers were the authors of the first published papers in which the respective names appeared (Walker, 1846; Westwood, 1839). The fact that Walker and Westwood had access to Haliday's MSS., as stated in their papers, does not remove the responsibility of publication from them to Haliday. In this respect the lead of such authors as Kloet & Hincks (1945) and Debauche (1948) was followed.

As is the case with other hymenopterous families, the Mymaridae are difficult to define precisely. The following definition may, however, prove helpful in recognizing members of the family:—

Mymaridae: Small to minute chalcidoid wasps with greatly reduced venation in the fore wings, the marginal vein usually short and terminating within the first third of the wing's length; stigmal vein greatly reduced, scarcely, if at all, descending into the membrane of the wing; fore and hind wings usually with a long fringe of marginal cilia; hind wings stalked, always very narrow, its cephalic and caudal margins subparallel (except *Anagroidea* Girault, a poorly known Australian genus); antennae long and slender, always distinctly clavate in the female, the club one to three-segmented, and filiform in the male; tarsi four or five-segmented; parasitic in the eggs of other insects.

SECTION 1.—THE GENERA

Preliminary key to the genera and subgenera of the Mymaridae

Abdomen broadly and truncately sessile; phragma plainly projecting into the abdomen.....Subfamily **Alaptinae** (I)

Abdomen convexly rounded at the base; phragma at most barely projecting into the abdomen..... Subfamily **Mymarinae** (II)

I.—Subfamily Alaptinae

Tarsi with four segments..... Tribe **Anagrini**

Tarsi with five segments..... Tribe **Alaptini**

Tribe Anagrini

1. Club solid; scutellum followed by a pair of sclerites distinctly separated; male antenna with 13 segments..... **Anagrus** Haliday
   Club of two or three segments..... 2
2. Club two-segmented; body flattened dorsoventrally; funicle segments short and wide.....**Platypatasson** Ogloblin
   Club three-segmented..... 3

3. Body not flattened dorsoventrally; club divided obliquely into three segments..... **Stethynium** Enock
Body strongly flattened dorsoventrally; club three-segmented, funicle six-segmented, the segments short and wide..... **Platystethynium** Ogloblin

Tribe Alaptini

1. Funicle with four segments..... **Allomymar** Kieffer
Funicle with more than four segments..... 2
2. Funicle five-segmented; marginal vein short; hind margin of fore wing excised beneath the venation; male antenna with 10 segments..... **Alaptus** Westwood
Funicle with six or seven segments..... 3
3. Funicle six-segmented..... 4
Funicle seven-segmented..... 5
4. Mesoscutum with parapsidal furrows; axillae distinctly or strongly advanced; scutellum normal; thorax with reticulated sculpture; scape long, club large; male unknown..... **Litus** Haliday
Mesoscutum without parapsidal furrows; scutoscutellar suture transverse, axillae not advanced; scutellum with two small anterior fossae..... **Neolitus** Ogloblin
5. Scape with three angular projections on upper surface, space between first and second gently sinuate, basal projection less prominent than others; marginal cilia very long; ovipositor diminutive..... **Dicopus** Enock
Scape without teeth-like projections..... 6
6. Occiput with a ridge at its limit with the vertex; abdominal tergites 2–4 with separated pleural sclerites. . **Callodicopus** Ogloblin
Occiput without transverse ridge; abdomen without pleurites delimited by sutures..... 7
7. Occiput with a deep indentation between the posterior ocelli..... **Chromodicopus** Ogloblin
Occiput normal..... 8
8. Funicle 2 of female ring-like; caudal margin of scutellum rounded..... **Dicopomorpha** Ogloblin
Female antenna without ring-like segment; caudal border of scutellum truncate, transverse..... **Dicopulus** Ogloblin

II.—Subfamily Mymarinae

1. Tarsi with four segments..... 2
Tarsi with five segments..... Tribe **Ooctonini**
2. Abdomen not distinctly petiolate, rather more subpetiolate or subsessile..... Tribe **Anaphini**
Abdomen distinctly petiolate..... Tribe **Mymarini**

Tribe Ooctonini

1. Petiole short, not as long as wide..... 2
Petiole longer, at least as long as wide..... 6
2. Female funicle with five or six segments..... 3
Female funicle with more than six segments..... 4

3. Female funicle five-segmented, male antenna 13-segmented; marginal vein greatly elongate, extending nearly or more than half the length of the wing..... **Arescon** Walker
Female funicle six-segmented..... **Sphegilla** Debauche

4. Female funicle seven-segmented; wings and thoracic structure as in species of *Lymaenon:* ovipositor of type species developed as in *Lymaenon* (*Gastrogonatocerus*) .... **Gahanopsis** Ogloblin
Female funicle with more than seven segments..... 5

5. Club simple; propodeum without or with poorly developed longitudinal carinae; ovipositor normal..... **Lymaenon** Walker
(*a*) Ovipositor prodigiously developed, produced beneath the thorax anteriorly..... **L. (Gastrogonatocerus)** Ogloblin
(*b*) Ovipositor normal; propodeum with a pair of lateral and a pair of median longitudinal carinae..... ..... **L. (Cosmocomoidea)** (Howard)
Club two-segmented..... **Eustochomorpha** Girault

6. Hind wings normal..... 7
Hind wings strongly reduced; petiole two-segmented; ocelli absent; mandibles large..... **Mymaromma** Girault

7. Female funicle seven-segmented (not overlooking a ring-segment, if present)..... 8
Female funicle eight-segmented; propodeum patterned with obvious carinae..... **Ooctonus** Haliday

8. Fourth antennal segment of male and female a minute ring-segment; fore wing always narrow and distinctly curved on the fore and hind margins..... **Camptoptera** Foerster
Male and female antenna lacking a ring segment, all antennal segments well developed..... **Eomymar** Perkins

TRIBE ANAPHINI

1. Ovipositor enclosed by prominent hypogynium..... 2
Ovipositor not so enclosed, normal..... 3

2. Funicle five-segmented, male antenna 12-segmented **Parallelaptera** Enock
Funicle six-segmented, male antenna 13-segmented **Erythmelus** Enock

3. Ovipositor, if exserted, not longer than abdomen (except some species of *Polynemoidea*)..... 4
Ovipositor exserted, longer than abdomen..... 18

4. Club simple..... 5
Club with two or three segments..... 11

5. Hind wings very broad; body with rough sculpture; with a spinelike projection from the second gastral segment on each side of the petiole; antennae inserted at clypeus; mandibles bidentate; male antenna 13-segmented..... ..... **Anagroidea** Girault
Hind wings not broad, normal; body usually without rough sculpture; male antenna 12-segmented..... 6

6. Venation extending over half the length of fore wing; marginal and submarginal veins about equal; coxae and femora swollen..... **Nesetaerus** Doutt
Venation not so lengthened, normal for family..... 7

7. Scutellum wider than long; disc of fore wing normally setose..... 8
Scutellum longer than wide; wings almost destitute of surface setae..... 10

8. Mesonotum and pronotum lengthened; fore coxae arising from middle of thorax..... **Anaphes (Synanaphes)** n. comb.
Thorax, thickset, mesonotum strongly curved; fore coxae arising in first third of thorax..... 9

9. Scape without cross-ridges..... **Anaphes** Haliday
Scape with cross-ridges..... **Anaphes (Ferrierella)** n, comb.

10. Scape clearly separated from radicle; orbital trabeculae divided into short pieces; propodeum with spiracular setae..... **Cleruchus** Enock
Scape confluent with radicle; orbital trabeculae entire; propodeum without subspiracular setae; mesophragma penetrating base of abdomen..... **Eucleruchus** Ogloblin

11. Club of three segments..... 12
Club of two segments..... 13

12. Venter of abdomen produced anteriorly beneath the thorax to contain the elongate ovipositor..... **Idiocentrus** Gahan
Venter of abdomen normal, not produced beneath thorax **Polynemoidea** Girault

13. Thorax with interscutellum (see p. 22) lengthened; fore wing broad..... **Patasson (Hofenederia)** n. comb.
Thorax compact, thickset; fore wings ordinarily more slender..... 14

14. Scape with distinct cross-ridges..... 15
Scape without cross-ridges..... 16

15. Propodeum entire; pronotum, scutellum and occiput divided by a longitudinal furrow or suture; fore wings relatively short with rounded disc; mesophragma emarginate..... **Patasson (Schizophragma)** n. comb.
Propodeum with longitudinal suture; scutellum not divided longitudinally; mesophragma rounded or only slightly emarginate caudally.... **Patasson (Fulmekiella)**n. comb.

16. Ovipositor exserted at least half the length of the abdomen **Paranaphoidea** Girault
Ovipositor not or only slightly exserted..... 17

17. Male antenna with twelve segments..... **Patasson** Walker
Male antenna with thirteen segments.....
.....**Patasson (Yungaburra)** n. comb.

18. Club simple..... **Australomymar** Girault
Club with three segments..... **Selenaeus** Waterhouse

Tribe Mymarini

1. Female funicle eight-segmented, club simple; propodeum and basal gastral segment with prodigious carinae.....
.....**Ptilomymar** n. gen.
Female funicle with fewer than eight segments..... 2

2. Female antenna ten-segmented, club two-segmented..... 3
Female antenna nine-segmented..... 4

3. Marginal vein and ovipositor elongate..... **Eustochus** Haliday
Marginal vein short; hind tarsi longer than their tibiae (according to Foerster's description)..... **Doriclytus** Foerster

4. Female antennal club of more than one segment, funicle of less than six segments..... 5
Female antennal club simple, funicle six-segmented..... 6

5. Club three-segmented, funicle four-segmented.....
.....**Tanaomymar** n. gen.
Club two-segmented, funicle five-segmented.**Bruchomymar** Ogloblin

6. Compound eyes very small, ocelli lacking; hind wings very short, reduced, not or barely reaching the petiole; fore wing narrow, terminating in two long setae.....
.....**Stenopteromymar** Ferriere
Compound eyes normally developed, ocelli present (except *Oncomymar*); wings normal or variously modified 7

7. Hind wings abbreviated, filiform or poorly developed with only a few marginal cilia..... 8
Hind wings not filiform, usually normal (except abbreviated in *Scolopsopteron*)..... 10

8. Fore wings of conventional shape as in *Polynema* **Richteria** Girault
Fore wings variously modified, often oar-shaped..... 9

9. Scape long, medially constricted; fore wings oar-shaped with elongate petiole; prothoracic spiracles sessile.. **Mymar** Curtis
Scape short; petiole of fore wing not so greatly exaggerated; prothoracic spiracles stalked.. **Neomymar** Crawford

10. The two distal segments of funicle swollen and club-like, the antenna thus appearing to have a club consisting of the true club segment and the two segments preceding it..... **Erdösiella** Soyka
With only the last antennal segment swollen and club-like 11

11. Fore wing with lengthened postmarginal vein, or with a distinct vein-like projection (= Rs) from stigmal portion 12
Fore wing without long postmarginal and Rs..... 16

12. Scutellum without transverse row of fossae; ocelli lacking in the male (female as yet unknown); mesoscutum poorly developed, short and small..... **Oncomymar** Ogloblin
Scutellum with a transverse row of fossae; ocelli present mesoscutum well developed..... 13

13. Fore wings narrow, shaped like a knife blade, pointed apically; hind wing abbreviated..... **Scolopsopteron** Ogloblin
Fore wings normal..... 14

14. Propodeum with two keels which come together posteriorly to form the stem of a " Y "..... **Nesopolynema** Ogloblin
Propodeum otherwise..... 15

15. Propodeum without distinct keels.... **Palaeoneura** Waterhouse
Propodeum with paired keels which come together medially and then diverge apically..... **Cremnomymar** Ogloblin

16. Fore wings strongly concave on the ventral surface of the disc; mesoscutum weakly developed, short and small.....
.....**Mymarilla** Westwood
Fore wings normal, flat on the disc..... 17

17. Parapsidal sutures broadly furrowed, straight; scutellum divided by a longitudinal suture..... **Tetrapolynema** Ogloblin
Parapsidal sutures narrow; scutellum entire..... 18

18. Marginal vein punctiform..... 19
Marginal vein lengthened; propodeum with two carinae; head, thorax, coxae, femora strongly reticulate..... **Caraphractus** Walker

19. Pro- and mesothorax with gross, blunt, spinelike setae; propodeum without keels..... **Chaetomymar** Ogloblin
Thorax without such gross setae..... 20

20. Propodeum with two keels converging above the petiolar insertion to form a more or less distinct process; discal setae of fore wing often with enlarged bases (tormae); fore wings often banded..... **Acmopolynema** Ogloblin
Propodeal keels otherwise or absent; wings usually hyaline, tormae lacking..... 21

21. Scape with distinct scale-like structures; prothoracic spiracles placed mesad of normal position, on the line between the pronotum and mesoscutum; marginal vein thin, not swollen..... **Stephanodes** Enock
Scape without such structures; prothoracic spiracles normally placed; marginal vein thickened, swollen..... 22

22. Fore wing with two distinct rows of discal setae on basal half..... **Grangeriella** Soyka
Fore wing with discal setae scattered, not in rows..... 23

23. Ovipositor greatly developed within the abdominal cavity, its basal loop occupying the greater part of the base of the abdomen. (Based on Soyka's review of Foerster's material)..... **Doriclytus** Foerster
Ovipositor not thus developed, normal..... 24

24. Propodeum without median keel or tooth; sometimes with small teeth in the angle between the coxal and petiolar insertion..... **Barypolynema** Ogloblin
Propodeum with a more or less developed median keel, always at least with a tooth or projection above the petiolar insertion; scape smooth or with cross-ridges internally ..... **Polynema** Haliday

Subfamily ALAPTINAE, Tribe Anagrini

Genus ANAGRUS Haliday

Anagrus Haliday, 1833, Ent. Mag. **1:** 346.
Type *Ichneumon atomus* Linnaeus.

Pteratomus Packard, 1864, Proc. Essex Inst. **4:** 137.
Type *Pteratomus putnamii* Packard.

Packardiella Ashmead, 1904, Mem. Carneg. Mus. **1** (4): 364.
Type *Pteratomus putnamii* Packard. *New synonym.*

Paranagrus Perkins, 1905, Bull. Hawaii. Sug. Ass. ent. Ser. **1:** 199.
Type *Paranagrus optabilis* Perkins. *New synonym.*

Distribution: Probably cosmopolitan; Europe; Africa; North and South America; Australia; Pacific Islands; Japan; Russian Turkestan.

Important reference: Debauche (1948).

Comments: Peck (1951) lists among " Unplaced Genera " the genus *Pteratomus* Packard with its type species *putnamii* Packard; no reference is made by Peck to *Packardiella* which was proposed by Ashmead (1904) as a new name for *Pteratomus* Packard. Girault (1929) states that " Packardiella (= *Pteratomus* Packard) is certainly founded on a mutilated male of *Anagrus* or allied genus ". Thus Packard described *Pteratomus putnamii* from a single mutilated male specimen, yet Ashmead (1904, p. 364) is found attempting to key out the female; this female evidently does not exist, and the authors incline to the view of Girault quoted above and therefore suppress *Packardiella.*

Bakkendorf (1926) first noted that the grounds for separating *Paranagrus* from *Anagrus* were insufficient. The present authors have examined specimens of what they believe to be *Paranagrus optabilis* Perkins, the generotypical species, as well as an undescribed South African species which is similar to *optabilis*, and concur with Bakkendorf's view. Morphologically the body and wings of *optabilis* and allied species show no noteworthy difference from *Anagrus* species as described by Debauche (1948) or as exemplified in several species before the authors from South Africa, North America and Europe. The longer first funicle segment of those species in the *optabilis* group can at most, it is believed, distinguish this group subgenerically.

Genus PLATYPATASSON Ogloblin

Platypatasson Ogloblin, 1946, Iowa St. Coll. J. Sci. **20** (3): 277–295.

Type *Platypatasson fransseni* Ogloblin.

Distribution: Java; Argentina.

Comments: This genus has distinct affinities with *Patasson* Walker, but the broad abdominal attachment to the thorax brings it into the same tribe as *Platystethynium* Ogloblin, a genus with which it has, evidently by convergence, several features in common. The two-segmented female club distinguishes its species at once from those of other genera in the tribe, and the short, compressed funicle segments differ strongly from those of *Patasson* and related genera. The type species, *fransseni*, was examined in the USNM collection, and the striking similarity with *Platystethynium*, apparently developed as a result of parasitizing the eggs of Tettigoniidea, is indeed noteworthy. Ogloblin (1958) has described two further species from Argentina in this interesting genus.

Genus STETHYNIUM Enock

Stethynium Enock, 1909, Trans. R. ent. Soc. Lond. (1909): 449–459.

Type *Stethynium triclavatum* Enock.

Distribution: Europe; South Africa; United States of America; Australia.

Important reference: Debauche (1948).

Comments: A very distinct genus which can be confused with no other except possibly the following genus from which it ought, however, to be readily separated according to the characters mentioned in the key. This genus is here recorded from the Ethiopian region for the first time, this record based on the collection of a single female in a suction trap at Grahamstown, Cape Province; the species has not yet been determined.

Genus PLATYSTETHYNIUM Ogloblin

Platystethynium Ogloblin, 1946, Iowa St. Coll. J. Sci. **20** (3): 277–295.

Type *Platystethynium onomarchicidum* Ogloblin.

Distribution: Java.

Comments: Ogloblin (1946) has drawn attention to the remarkable convergence exhibited by the present distinctive genus and *Platypatasson* Ogloblin resulting apparently from their habit of parasitizing the eggs of Tettigonoidea. *Platystethynium* has obvious affinities with *Stethynium* but the two genera are readily distinguishable.

Tribe Alaptini

Genus ALLOMYMAR Kieffer

Allomymar Kieffer, 1913, Voyage Alluaud et Jeannel en Afr. Or., 1911–1912. Hym., 1: 30.

Type *Allomymar taitae* Kieffer.

Distribution: Uganda.

Important reference: Debauche (1949).

Comments: This genus is known to the authors and to Debauche (l.c.) from the description only. It has been taken up in the key on the basis of its sessile abdomen and five-segmented tarsi. Debauche (l.c.) gives a reconstructed generic diagnosis in which he points out that the genus may be misplaced in the Mymaridae.

Genus ALAPTUS Westwood

Alaptus Westwood, 1839, Introd. Mod. Class. Ins. **1** (Synopsis): 79.
Type *Alaptus minimus* Westwood.

Parvulinus Mercet, 1912, Bol. Soc. Esp. Hist. nat. **12:** 331–337.
Type *Parvulinus auranti* Mercet.

Metalaptus Malenotti, 1917, Redia **12:** 339.
Type *Metalaptus torquatus* Malenotti.

Distribution: Europe; Africa; United States of America; Haiti; Peru; Hawaii; Australia; China; India.

Important references: Debauche (1948), Hincks (1959).

Comments: This genus represents in typical form the broad abdominal attachment to the thorax, with the mesophragma projecting strongly into the abdominal cavity. The members of this genus are readily recognizable from all others known to the authors by the usually strongly excised caudal margin of the fore wing.

The name *Alaptus* is credited to Westwood who first published it as a generic name (Westwood, 1839). On the same page, Westwood designated the type as " *M. Minimus** Walker ", the asterisk referring to a footnote in which the following quotation from the Haliday MSS. appears: " The type of this genus is the smallest Hymenopterous insect known, being about the half the size of *Anagrus atomus* ". The authors believe this to constitute a description, and therefore do not agree with Hincks (1959) that *M(ymar) minimus* Wlk. is a *nomen nudum*. They therefore cite the type of the genus as above, crediting the specific name to Westwood since Haliday, for some unknown reason, saw fit to publish neither the specific nor the generic name.

Genus LITUS Haliday

Litus Haliday, 1833, Ent. Mag. **1:** 345.

Type *Litus cynipseus* Haliday.

Distribution: Europe; South Africa; Ceylon; St. Vincent Island; Argentina; Australia.

Important references: Ogloblin (1935, 1954/55), Debauche (1948).

Comments: This old and distinct genus has been made readily recognizable by Ogloblin and Debauche in the three papers cited. Like the following genus, *Litus* is readily distinguished from other mymarids by the remarkably heavy sculpture, the nine-segmented antenna in the female, and the characteristic wing-venation. The present authors do not agree with Ashmead's (1904) synonymy of the fossil genus *Malfattia* Meunier with *Litus* (see *Malfattia* p. 37).

Genus NEOLITUS Ogloblin

Neolitus Ogloblin, 1935, Rev. Ent., Rio de J. **5** (1): 59–64.

Type *Neolitus argentinus* Ogloblin.

Neolitiscus Ghesquière, 1946, Rev. Zool. Bot. afr. **39** (4): 367–373.
Unnecessary new name.

Lithisca Ogloblin, 1954/55, Mitt. münch. ent. Ges. **44/45:** 498-502.
Lapsus for *Neolitiscus*.

Distribution: Argentina.

Comments: Ghesquière (1946) proposed the new name *Neolitiscus* for *Neolitus* Ogloblin; the latter author (Ogloblin, 1954/55) points out that this new name is unnecessary, but, by a *lapsus*, referred to Ghesquière's new name as *Lithisca*, thus introducing a second unnecessary name.

In his second cited paper Ogloblin corrects an earlier statement and drawing of *L. cynipseus* and indicates that the mesophragma of the latter has a rounded caudal margin. This correction removes an important difference between *Neolitus* and *Litus*, but in view of other differences mentioned in the key, the authors are still inclined to maintain *Neolitus*, at least provisionally, as a valid and distinct generic category.

Genus DICOPUS Enock

Dicopus Enock, 1909, Tros. R. ent. Soc. Lond. (1909): 449–459.

Type *Dicopus minutissima* Enock.

Distribution: England; Spain; Canada; Fiji; Australia.

Important reference: Ogloblin (1955).

Comments: This genus, together with the four following ones, seems to form a natural group as indicated by Ogloblin (1955). The latter author pointed out that the species presently placed in *Dicopus* need further study. The male types of *D. halitus* Girault and *D. psyche* Girault were examined in the USNM collection, but this examination led to no definite conclusion. These insects are extremely small, and unless they are well mounted, preferably after clearing, it is not always possible to place them generically. Girault's *halitus* specimen has two visible protuberances on the scape, his *psyche* apparently has a smooth scape. The present authors are not convinced that the protuberances on the scape constitute a valid generic character, and,

consequently, it is not possible to comment on the validity or otherwise of this or of the following four genera. In the meantime, until this difficult group of genera has been reworked in the light of existing described *Dicopus* species, there is little alternative but to follow Ogloblin's (1955) treatment of the group.

Genus CALLODICOPUS Ogloblin

Callodicopus Ogloblin, 1955, Boll. Lab. Zool. Portici **33:** 377-397.

Type *Callodicopus crassula* Ogloblin.

Distribution: Argentina.

Comments: The main distinguishing characters of this genus are the transverse trabecula across the posterodorsal angle of the head and the pleurites of the abdomen distinctly separated from their tergites. Attention is drawn to an important misprint in Ogloblin's description (Ogloblin, 1955, p. 377); the description should indicate that the fourth antennal segment, not the third as stated, is ringlike, in order to conform with the drawings of the type and other species given on the following pages. For additional comments see under *Dicopus* above.

Genus CHROMODICOPUS Ogloblin

Chromodicopus Ogloblin, 1955, Boll. Lab. Zool. Portici **33:** 377–397.

Type *Chromodicopus pulchricornis* Ogloblin.

Distribution: Argentina.

Comments: The profoundly emarginate vertex serves to distinguish this genus from the others associated with it. However, this character needs to be evaluated in the described *Dicopus* species before the value of this generic category can be ascertained.

Genus DICOPOMORPHA Ogloblin

Dicopomorpha Ogloblin, 1955, Boll. Lab. Zool. Portici **33**: 377–397.

Type *Dicopomorpha macrocephala* Ogloblin.

Distribution: Argentina.

Comments: Its author separates this genus from *Dicopus* and allied genera on certain structural characters of the head and thorax. Regarding the value of this genus the same remarks apply as made under *Dicopus* and the previous genus.

Genus DICOPULUS Ogloblin

Dicopulus Ogloblin, 1955, Boll. Lab. Zool. Portici **33:** 377–397.

Type *Dicopulus stramineus* Ogloblin.

Distribution: Argentina.

Comments: Dicopulus lacks a ring-like segment in the female funicle, and has the transversely divided scutellum with a transverse hind margin; combinations of these with other characters appear to make this genus distinct from the four related genera given above. Here again, these characters require study in the described *Dicopus* species before certainty can be obtained regarding their value.

Genus ARESCON Walker

Arescon Walker, 1846, Ann. Mag. nat. Hist. **18:** 49–50.
Type *Mymar dimidiatus* Curtis.

Panthus Walker, 1846, Ann. Mag. nat. Hist. **18:** 52.
Type *Panthus crassicornis* Walker.

Leimacis Foerster, 1847, Linnaea Ent. **2:** 208.
Type *Leimacis rufula* Foerster.

Limacis Foerster, 1856, Hym. Stud. **2:** 116, 117, 120.
Emendation of *Leimacis* Foerster.

Xenomymar Crawford, 1913, Proc. U.S. nat. Mus. **46:** 343–352.
Type *Xenomymar urichi* Crawford. *New synonym.*

Neurotes Enock, 1914, Proc. ent. Soc. Lond. (1913): cxxxiv.
Type *Neurotes iridescens* Enock.

Distribution: Europe; Africa; North and South America; Hawaii; Caroline Islands; Australia.

Important references: Debauche (1948), Kryger (1950).

Comments: Neurotes Enock was suppressed as a synonym without explanation by Kloet & Hincks (1945). Enock's genus and *Xenomymar* Crawford, which is here proposed as a synonym of *Arescon*, are undoubtedly names which have been applied to species of the same genus. That this is the case was suspected when one of the authors (D.P.A.) sent some South African material to Dr. W. D. Hincks and, later, some of the same species to Dr. A. A. Ogloblin for determination. Hincks determined the material as " probably *Neurotes* " and Ogloblin as *Xenomymar* sp. The latter authority subsequently stated in a letter (to D.P.A.) that he had been aware of the probable identity of *Neurotes* with *Xenomymar* for some time (see also Ogloblin, 1957A) but that he had been unsuccessful in locating the types of Enock's typical species *iridescens*. Material of this latter species has been examined in the BM collection—it is believed to be the type material of *Neurotes iridescens* Enock—and the types of *Xenomymar urichi* Crawford have been examined in Washington; there can be no doubt that these species belong in a single genus and there is therefore no hesitation in proposing the above synonymy.

As a means of supporting and illustrating the synonymy of *Xenomymar* with *Arescon* attention is drawn to the description and drawings of *Arescon fulvum* n. sp. (pp. 39–44); if these are compared with the careful description and drawings of *Arescon rufulum* Foerster given by Debauche (1948) the identity of the two genera becomes apparent. This has been confirmed, moreover, by the study of specimens of *Arescon dimidiatum* (Curtis) (det. Gahan) in the USNM collection. Finally no characters can be found which generically differentiate the species described in *Xenomymar* by Ogloblin (1938, 1957A), from either *Neurotes* or *Arescon*.

The species described as new in this article is the first record of the genus from the Ethiopian region; the species *aleurodiphaga* Risbec, apart from being assigned to the long-since synonymized genus *Limacis* Foerster, obviously does not belong in *Arescon*; indeed, it is probably not a mymarid but rather a proctotrupoid (Risbec, 1950, Fig. 90).

Genus SPHEGILLA Debauche

Sphegilla Debauche, 1948, Mem. Mus. Hist. Nat. Belg. **108:** 1–248.

Type *Sphegilla franciscae* Debauche.

Distribution: Belgium.

Comments: This genus of which only the female sex is known, has not been seen, but it is believed to be related more to *Camptoptera* Foerster than to *Alaptus*. Accordingly it has been placed in the tribe Ooctonini and separated from other genera in the key by its six-segmented funicle.

Genus GAHANOPSIS Ogloblin

Lymaenon (Gahanopsis) Ogloblin, 1946, Iowa St. Coll. J. Sci. **20** (3): 277–295.

Type *Lymaenon (Gahanopsis) deficiens* Ogloblin.

Decarthrius Debauche, 1949, Explor. Parc. nat. Albert Miss. de Witte, **49:** 1–105.

Type *Decarthrius straeleni* Debauche. *New synonym.*

Distribution: Trinidad; Africa.

Comments: It is felt that the number of segments in the female antenna is a reliable generic character in most of the Mymaridae; the subgenus *Gahanopsis* is therefore elevated to generic status since its typical species has a seven-segmented funicle, like *Decarthrius straeleni* Debauche upon which *Decarthrius* was based. The types of *deficiens* are in the USNM and a comparison of these with Debauche's generic and specific descriptions does not provide morphological grounds which, in the authors' opinion, warrant the latter's inclusion in a separate genus. The main difference between the two species is the strongly anteriorly produced ovipositor of *deficiens*. As in the genus *Anaphes* in this paper this difference is regarded to be of, at most, subgeneric rank, and the above synonymy is therefore proposed.

Genus LYMAENON Walker

Lymaenon Walker, 1846, Ann. Mag. nat. Hist. **18:** 49.
Type *Lymaenon acuminatus* Walker.

Rachistus Foerster, 1847, Linn. Ent. **2:** 203.
Type *Ooctonus litoralis* Haliday.

Gonatocerus of authors not Nees, 1834 (see Burks, 1958).

Oophilus Enock, 1909, Trans. R. ent. Soc. Lond. (1909): 458.
Type *Oophilus longicauda* Enock.

Agonatocerus Girault, 1913, Canad. Ent. **45:** 276; Mem. Qd. Mus. **2:** 107–129.
Type *Agonatocerus humboldti* Girault.

Gonatoceroides Girault, 1913, Mem. Qd. Mus. **2:** 107–129.
Type *Gonatoceroides australica* Girault.

Distribution: Probably cosmopolitan; Europe; Russia; Africa; Madagascar; Seychelles; North and South America; Puerto Rico; Cuba; Haiti; Trinidad; Pacific Islands; Australia; Java; Japan.

Important reference: Debauche (1948).

Comments: This is a readily recognizable genus with more than 200 described species and varieties. Ogloblin (1935b) has described a subgenus *Gastrogonatocerus* for species having the ovipositor produced strongly beneath the thorax. His second subgenus, *Gahanopsis*, has been discussed above. Debauche (1948, 1949) uses a system of species-groups which seems a satisfactory way of dealing with the rather extensive European and African faunae of *Lymaenon*.

In a recent paper Ogloblin (1959) has used *Cosmocomoidea* Howard as a subgenus of *Lymaenon*, allowing it this status mainly on propodeal characters which are mentioned in the key, and illustrated by Ogloblin (1959). Previously Girault (1929) and Debauche (1948) placed *Cosmocomoidea* in synonymy with *Ooctonus* Haliday. Specimens in the USNM collection determined as *Cosmocomoidea morrilli* Howard by Gahan, as well as the type of *morrilli*, have been examined (by D.P.A.), and the present authors concur with Ogloblin's view. *C. morrilli* is immediately associated with species of *Lymaenon* by the wing venation which has the hypochaeta placed between the proximal and distal macrochaetae, closer to the latter than to the former, whereas in *Ooctonus* species the hypochaeta arises near the commencement of the marginal vein. In *morrilli* the petiolar segment appears as a very narrow first gastral segment in dorsal view, not distinctly separated from the second, while in several species of *Ooctonus* examined, the petiole is separated by a distinct segmental joint or septum from the usually steeply ascending first gastral segment—a condition typical for petiolate forms such as *Mymar* and *Polynema* species. The sculpture of the propodeum of *morrilli* agrees well with that illustrated by Ogloblin (1959) for his new species, and all of these differ markedly from the propodeum of *Ooctonus* species. The material of *morrilli* examined differs from Ogloblin's species in having two rather strong pairs of mesoscutal setae.

Genus EUSTOCHOMORPHA Girault

Eustochomorpha Girault, 1915, Mem. Qd. Mus. **3:** 155.
Type *Eustochomorpha haeckeli* Girault.

Distribution: Australia.

Comments: This genus is known to the authors only from Girault's (l.c.) description. It would appear to be distinct on the basis of its twelve-segmented antenna in the female.

Genus MYMAROMMA Girault

Mymaromma Girault, 1920, Insec. Inscit. Menstr. **8:** 38.
Type *Mymaromma goethei* Girault.

Petiolaria Blood and Kryger, 1922, Ent. mon. Mag. **58:** 229.
Type *Petiolaria anomala* Blood and Kryger.

Mymaromella Girault, 1931. A new habit in an old insect, Homo Pudicus and new Eurytomidae. Privately published, Brisbane, Sep. 1, 1931.
Type *Mymaromella mira* Girault. *New synonym.*

Distribution: Europe; Australia.

Important reference: Debauche (1948).

Comments.—Debauche (1948) has proposed the family Mymarommidae for the remarkable species of *Mymaromma*. The most striking character distinguishing this genus from all other mymarid genera known to the

authors is the two-segmented petiole. Debauche's illustrations of the head and thorax do not indicate any other structural differences which would justify its inclusion in a distinct family, although the head is peculiarly shaped. At present, until a detailed morphological analysis of *Mymaromma* produces new evidence to the contrary, it is preferred to regard it merely as an extremely aberrant member of the Mymaridae.

Girault's (1931) privately published description of *Mymaromella* is contained in four lines as follows: " From *Mymaromma*: seven funicles. *M. mira*. Brown, wide cross-band middle of wing, latter 11 lines cilia, 45 elongate fringes shorter than widest. Funicle 6 elongate, nearly twice 7, latter bit wider, longer than rest, equal pedicel. Wing 2 mere supports to 1. Canterbury, Vic. B. Blackbourn." The authors have examined a female specimen laterally mounted on a slide, in the USNM collection. The data on this slide are Ototway Forest, Ormond, Vic. Australia and the collector W. S. Anderson. The specimen bears the determination " *Petiolaria mira* (Gir.) " in Gahan's handwriting and it agrees with Girault's rather telegraphic description quoted above. A careful study of this specimen and of the literature on *Mymaromma* and *Petiolaria* reveals no character of generic rank which can be used to maintain the generic distinctness of *Mymaromella*. Gahan evidently also came to this conclusion in respect of *Petiolaria* and since the synonymy of *Petiolaria* with *Mymaromma* is well established the authors have no hesitation in introducing the new synonymy given above. So far as can be established, three species of this genus have been described: *Mymaromma goethei* Girault, *M. anomala* (Blood and Kryger) and *M. mira* (Girault) n. comb.

Genus OOCTONUS Haliday

Ooctonus Haliday, 1833, Ent. Mag. **1:** 269, 343.
Type *Ooctonus insignis* Haliday.

Sphecomicrus Walker, 1846, Ann. Mag. nat. Hist. **18:** errata, 50.
Type *Ooctonus insignis* Haliday.

Distribution: Europe; Madagascar; North and South America; Australia.

Important references: Debauche (1948), Hincks (1952).

Comments: The cited papers of Debauche and Hincks have made this genus easily recognizable. For a discussion of the erroneous suppression of *Cosmocomoidea* Howard within this genus see comments on *Lymaenon*. Ashmead (1904) tentatively synonymized *Palaeomymar* Meunier, based on a fossilized insect, with *Ooctonus*. The authors do not agree with Ashmead and deal with this genus among the unplaced genera in this article.

Genus CAMPTOPTERA Foerster

Camptoptera Foerster, 1856, Hym. Stud. **2:** 116, 119, 144.
Type *Camptoptera papaveris* Foerster.

Stichothrix Foerster, 1856, Hym. Stud. **2:** 117, 118, 121
Type *Stichothrix cardui* Foerster. *New synonym.*

Pteroclisis Foerster, 1856, Hym. Stud. **2:** 144.
Type *Camptoptera papaveris* Foerster.

Macrocamptoptera Girault, 1910, J.N.Y. ent. Soc. **18:** 239.
Type *Camptoptera metotarsa* Girault.

Congolia Ghesquière, 1942, Rev. Zool. Bot. afr. **36:** 320.
Type *Congolia sycophila* Ghesquière.

Distribution: Europe; Pakistan; Africa; North and South America; Puerto Rico; Australia.

Important reference: Debauche (1948).

Comments: This genus contains a readily recognizable group of minute species with narrow, curved fore wings and ten-segmented antennae in the female, twelve in the male. Ogloblin and Annecke (in press) describe a subgenus with two new species in which the males have nine-segmented antennae.

With regard to the new synonym proposed above, Foerster (1856) originally described *Stichothrix cardui*, the type of the genus, as having four-segmented tarsi. Soyka (1953) reports that an examination of the type female in the Vienna Natural History Museum has revealed that Foerster was mistaken in that the specimen has in fact five tarsal segments. There is no reason to doubt Soyka's statement. Soyka (1953) redescribes the genus and the typical species from the original type material, and also assigns two new species, *pechlaneri* and *stammeri*, to the genus. He discusses the relationships of *Stichothrix* and *Camptoptera*, and maintains that the two genera are distinct on the basis of the presence in *Stichothrix* of complete parapsidal sutures, as well as other more trivial characters. The authors have examined material of some twelve species of *Camptoptera* and do not regard the parapsidal sutures to be of generic value, since in *papaveris* Foerster (a female in R.L.D.'s collection, det. Soyka) they are scarcely developed while in *reticulata* Ogloblin (a female in D.P.A.'s collection, det. Ogloblin) they are complete; in yet other species nearly all intermediate conditions of development are encountered. There is no hesitation in transferring *pechlaneri* Soyka (a male and a female in R.L.D.'s collection, det. Soyka) to *Camptoptera*, and no reason can be found in Soyka's paper for maintaining either *cardui* Foerster or *stammeri* Soyka in a genus apart from *Camptoptera*. In connection with this synonymy it may be noted that of the other species assigned to *Stichothrix*, *perineti* Risbec (1952) is almost certainly generically misplaced, *platensis* Brethes (1913) may or may not be correctly placed, and *bifasciatipennis* Girault (1908) was transferred by its author subsequently to *Polynema* Haliday (Girault, 1910) and later still made the type of *Acmopolynema* Ogloblin (1946).

The type specimen of *Macrocamptoptera metotarsa* (Girault) is on a card-point in the USNM collection. It is not in good condition, and parts were mounted on a slide by Crawford. This slide bears the number 112, and contains a pair of wings, part of an antenna, and a fore leg. The general habitus is suggestive of species of *Camptoptera*, although there are some anomalous features, such as the insect's relatively large size, and the relatively very large ring-segment in the antenna; until more specimens come to hand, it is not possible to be sure about the synonymy of this genus with *Camptoptera*. In the meantime Peck (1951) is followed.

Debauche (1948) proposed the synonymy of Ghesquière's genus, *Congolia*, and there seems to be little question about the correctness of this.

Genus EOMYMAR Perkins

Eomymar Perkins, 1912, Bull. Hawaii. Sug. Ass. ent. Ser. **10:** 1–27.
Type **Eomymar muiri** Perkins.

Distribution: Java, Australia.

Comments: This genus has been separated from *Camptoptera* in the key on the absence of a ring-segment in the male and female funicle of *Eomymar*.

In response to a request from one of the authors (D.P.A.), Dr. Fred Bianchi, Principal Entomologist, Experiment Station of the Hawaiian Sugar Planters Association, Honolulu, Hawaii, very kindly examined the type material of *Eomymar muiri* Perkins comprising four females and a male under a single cover on a slide. The material is poorly mounted and preserved, and unfortunately details of the thoracic structure are not apparent. From Perkins' (1912) description *Eomymar* can be differentiated from *Camptoptera* only on the antennal character mentioned, and possibly on the curvature of the wings of *Camptoptera*. Until Perkins' types are remounted, or more material of his genus becomes available, it is not possible to be sure about the validity or relationships of *Eomymar*.

Tribe Anaphini

Genus PARALLELAPTERA Enock

Parallelaptera Enock, 1909, Trans. ent. Soc. Lond. (1909): 449–459.
Type *Parallelaptera panis* Enock.

Anthemiella Girault, 1911, Proc. ent. Soc. Wash. **13:** 120–123.
Type *Anthemiella rex* Girault.

Distribution: Europe; United States of America; Africa.

Important reference: Debauche (1948).

Comments: Parallelaptera is readily recognizable and clearly related to *Erythmelus* Enock. In the key both these genera are distinguished from others in the tribe by the fact that the females have the ovipositor enclosed in a well-developed " hypogynium ", a useful, though neglected, term for the ploughshare-shaped apical sternite of the abdomen. Ashmead (1904) used the term " hypopygium " (pp. 228–9, 292) in this context and, as a consequence, his keys are extremely difficult to use, this word being more or less meaningless when used in this way.

Parallelaptera forms a distinct group of three species, one of which is described herein from South Africa, and is the first record of the genus from the Ethiopian region. The type species is European for it was described from specimens collected in England; it has subsequently been collected in Denmark and Austria according to the authors' records. A closely allied species, *P. rex* (Girault) was described as the type of *Anthemiella* (Girault. 1911a) from a single specimen taken at Illinois, U.S.A. In the following year, Girault (1912) recognized that *Anthemiella* was synonymous with *Parallelaptera*. Subsequently the species *rex* has been found to be widespread in the Western United States and also to occur in Baja, California. It was found associated with plants on which the sugar beet leafhopper, *Circulifer tenellus* (Baker), was breeding and has been recorded as a parasite of this pest (Peck, 1951). No actual breeding records of *P. rex* on *C. tenellus* can be found and repeated attempts by one of the authors (R.L.D.) to rear *P. rex* from California on the eggs of the sugar beet leafhopper have failed. Furthermore in 1952, in conjunction with a biological control project on *C. tenellus*, several shipments of plants on which this pest had been breeding in the field were collected by J. K. Holloway at Alicante, Spain, and shipped to the quarantine laboratory of the University of California at Albany, California. From these plants, species of *Amaranth* and *Chenopodium*, there emerged several different species of mymarids and trichogrammatids. In the lot was a number of *Parallelaptera* species which appear to the authors to be conspecific with *P. rex*. In determining this series they were struck with

the similarity between *rex* and *panis* but believe they can be distinguished. If this is true, then *rex* is distributed in both Europe and North America, but is not a parasite of *C. tenellus* because the Spanish forms, like those from America, will not reproduce on *C. tenellus*.

Genus ERYTHMELUS Enock

Erythmelus Enock, 1909, Trans. ent. Soc. Lond. (1909): 454.
Type *Erythmelus goochi* Enock.

Enaesius Enock, 1909, Trans. ent. Soc. Lond. (1909): 456.
Type *Enaesius agilis* Enock.

Distribution: Europe; Africa; North and South America; Puerto Rico; Haiti; Australia; Malaya.

Important references: Debauche (1948), Doutt (1949).

Comments: Antennal and wing characters separate this genus readily from the related *Parallelaptera*. *Enaesius* Enock appears to differ mainly from *Erythmelus* in the position and number of longitudinal sensoriae on the female funicle segments. Debauche (1948) lists *Enaesius* as a synonym, but treats the genus as a valid subgenus. Until more substantial morphological differences are found to separate the species assigned to these two genera the present authors are disinclined to grant *Enaesius* either generic or subgeneric status, though the small differences mentioned by Debauche may be useful in separating species-groups.

Genus ANAGROIDEA Girault

Anagroidea Girault, 1915, Mem. Qd. Mus. **3:** 164.
Type *Eustochus dubius* Girault.

Distribution: Australia.

Comments: This genus is known to the authors only from Girault's description, and from the fairly full description of the type species, originally given under *Eustochus* Haliday (Girault, 1913). In 1938 Girault described a second species from Australia. The broad hind wings set the species of this genus apart from all other mymarids known to the authors. Yet there is nothing in Girault's descriptions to suggest that one is dealing with a member of a different family. At present no more can be done than retain this genus within the Anaphini though no further information can be offered with regard to its relationships with other genera within this tribe.

Genus NESETAERUS Doutt

Nesetaerus Doutt, 1955, Ins. Micronesia: Hym. **19** (1): 17.
Type *Nesetaerus gressitti* Doutt.

Distribution: Caroline Islands (Truk).

Comments: The strongly elongate venation of the fore wing distinguishes this genus at once from the others with which it is associated in the key.

Genus ANAPHES Haliday

Anaphes Haliday, 1833, Ent. Mag. **1**: 269–346.
Type *Anaphes fuscipennis* Haliday.
Clinomymar Kieffer, 1913, Bull. Soc. Agric. Alger. **4:** 100.
Type *Clinomymar peyerimhoffi* Kieffer.

Mymar Curtis *sensu* Soyka, 1946, Zbl. Gesamtgeb. Ent. **1** (4/5): 177–185; 1949, Rev. Ent., Rio de J. **20:** 301–422; 1955, Mitt. munch. ent. Ges. **44/45:** 460–475.

Anaphes (Anaphes) Haliday *sensu* Debauche, 1948, Mem. Mus. Hist. nat. Belg. **108:** 1–248.

Stammeriella Soyka, 1950, Ent. NachrBl., Burgdorf **3** (11): 120–125.
Type *Stammeriella wolfsthali* Soyka. *New synonym.*

Mymar Curtis *sensu* Peck, 1951, in Meusebeck *et al.*, U.S. Dep. Agric. Monogr. **2:** 410–594.

Mymar Curtis *sensu* Burks, 1958, in Krombein *et al.*, U.S. Dep. Agric. Monogr. **2** (First suppl.): 62–84.

Distribution: Europe to Russia; Africa; North America to Point Barrow, Alaska; Puerto Rico; Brazil; Australia; Japan.

Comments: A great deal has been written about the confusion in the application of the names *Mymar* and *Anaphes*; for an account of these views see the comments on *Mymar*. The confusion arises, it is believed, from an erroneous designation by Curtis in 1832 of *Ichneumon punctum* Shaw as type of the genus *Mymar* Curtis and also from an unnecessarily and untenably restrictive and limited application of the Rules of Nomenclature by A. B. Gahan (1949) which had no regard for more than a hundred years of usage. The authors incline to the published and unpublished views of Westwood (1839, 1840, 1879), Foerster (1847, 1856), Ashmead (1904), Hincks (1944, 1952), Kloet & Hincks (1945), Debauche (1948, 1949), Kryger (1950), and Ogloblin (personal communication to D.P.A., May 15, 1959) all of whom in various ways tend to the conservation, and thus establish usage, of the names *Anaphes* (for species resembling *A. fuscipennis* Haliday) and *Mymar* (for species resembling *M. pulchellum* Curtis). It is appreciated that, in spite of the weight of opinion quoted, such a position may be questionable under a strict interpretation of the rules unless Curtis' original designation be set aside and disregarded.

The present authors agree with Debauche (1949) that it is not possible to distinguish *Clinomymar* Kieffer from *Anaphes* as far as one may judge from Kieffer's original description. Unlike Debauche (1948, 1949) they do not include any species of *Patasson* in their concept of *Anaphes*, since they regard the divided female antennal club of the former as an adequate generic character.

Soyka (1946, 1949) introduced two genera, *Synanaphes* and *Ferrierella*, and in so doing merely split two categories off from *Anaphes* the distinguishing characters of which include the relative lengths and widths of the thorax, and the presence or absence of cross-ridges on the scape. In 1950 Soyka described the genus *Stammeriella*, in its turn a segregate of *Ferrierella* about the status of which the authors are already doubtful. *Stammeriella* is characterized as having weak cross-ridges on the scape, and a more extensively hairless area on the fore wing than in *Ferrierella*. In their opinion there may be some justification for retaining *Ferrierella* and *Synanaphes* as subgenera although even as such, species-groups may be more desirable, but there is not the remotest reason for maintaining *Stammeriella* as a genus or subgenus. This name is therefore suppressed. In the authors' opinion the retention of such genera as *Stammeriella* would create a dangerous precedent in this family according to which practically every new species which exhibits one or two nice distinguishing characters may be described in a new genus. The foregoing opinions have been formed after studying a good series of species of

Anaphes in the authors' collections as well as in those of the USNM and BM; two species of *Synanaphes* (*ranalteri* and *medius* described and determined by Soyka) and two species of *Ferrierella* (*ovipositor* and *intermedia* described and determined by Soyka) in R.L.D.'s collection have also been examined. For the present it is not proposed to synonymize *Ferrierella* and *Synanaphes* since at the subgeneric level other students of the group may feel that they can serve a useful purpose. The following key (adapted from Soyka, 1954/55) for separating the species in these groups is offered:—

KEY TO SUBGENERA OF ANAPHES HALIDAY, MALES AND FEMALES

1. Mesonotum and pronotum rather lengthened, fore legs attached to the middle of the thorax..... **Anaphes (Synanaphes)** n. comb.
   Thorax thickset, not lengthened, mesonotum strongly convex; fore legs attached in the anterior third of the thorax..... 2
2. Antennal scape with cross-ridges..... **Anaphes (Ferrierella)** n. comb.
   Antennal scape without cross-ridges..... **Anaphes (Anaphes)** Haliday.

Genus CLERUCHUS Enock

Cleruchus Enock, 1909, Trans. ent. Soc. Lond. (1909): 449–459.
Type *Cleruchus pluteus* Enock.

Distribution: Europe; South America; South Africa.

Important reference: Debauche (1948).

Comments: The characteristic wings serve to distinguish this and the following genus from others in the tribe.

Cleruchus is apparently close to *Eucleruchus* Ogloblin but the two genera may be separated as indicated in our key.

Genus EUCLERUCHUS Ogloblin

Eucleruchus Ogloblin, 1940, Rev. Ent., Rio de J. **11:** 597–603.
Type *Eucleruchus neivai* Ogloblin.

Distribution: Argentina.

Comments: This genus is evidently closely related to the foregoing genus, but distinguishable in that it lacks the subspiracular setae on the propodeum and the mesophragma penetrates the base of the abdomen. Although this latter character may lead to confusion of this genus with the Alaptinae *Eucleruchus* as described by its author (Ogloblin, l.c.) is believed to be properly placed among the Mymarinae. Since material of *neivai* has not been seen this concept may be erroneous.

Genus IDIOCENTRUS Gahan

Idiocentrus Gahan, 1927, Proc. U.S. nat. Mus. **71** (4): 1–39.
Type *Idiocentrus mirus* Gahan.

Distribution: New Zealand.

Comments: This monotypic genus is, so far as is known, one of only two or three mymarids recorded from New Zealand. Gahan's (1927) description and diagram of *mirus* showing its three-segmented club and the ovipositor projecting strongly forward beneath the thorax suffices to distinguish the genus immediately from others known to the authors. The types are in the USNM and have been examined, but are unfortunately in such a poor

condition that the authors are unable to express themselves definitely regarding the relationships of the genus. Certainly, Girault (1930) had little ground for his unqualified assertion that " *Ideocentrus* is *Stethynium* " (!), and this proposed synonymy is not accepted.

Genus POLYNEMOIDEA Girault

Polynemoidea Girault, 1913, Trans. roy. Soc. S. Austr. **37:** 65; Mem. Qd. Mus. **2:** 116.

Type *Polynemoidea varicornis* Girault.

Distribution: Australia.

Comments: According to the authors' catalogues Girault (l.c., 1931, 1938) described five species in this genus, namely, *varicornis*, *lincolni*, *domestica*, *particoxae* and *incerta*. Of these only females are known of the first four while *incerta* was described from a single male specimen.

In the BM collection is a slide-mounted specimen bearing the data " Victoria: Melbourne, Canterbury; on windows in outbuildings. B. Blackbourne coll. A.A. Girault det." The determination is *Polynemoidea domestica* Girault. The specimen agrees well with Girault's very brief description of that species and is apparently remarkable for the genus in having an ovipositor which is scarcely exserted. Unfortunately this specimen is mounted laterally with the head twisted so that the mouthparts are uppermost, and without remounting this specimen and subsequent study under a high-powered modern microscope, it is not possible to add much to Girault's generic diagnosis. It may be noted, however, that the specimen examined bears a resemblance to *Anaphes* and allied genera in that the scutellum is similarly transversely divided into an anterior sensorial part and a posterior shield-like part; also the fore wings, though lacking the hairless streaks typical for many species of *Anaphes*, are not unlike those of the latter genus. The antennae of the specimen examined have short, rather compressed funicle segments, the second the longest, the last wider than long; pedicel nearly as long as first three funicle segments together, a little less than half as long as the scape and radicle together; three-segmented club as long as the last five funicle segments together.

Without a more detailed knowledge of such genera as *Idiocentrus* Gahan and *Selenaeus* Waterhouse it is not possible to be sure about the relationships of *Polynemoidea*. At present there ought not to be serious problems in its recognition.

Genus PATASSON Walker

Patasson Walker, 1846, Ann. Mag. nat. Hist. **18:** viii, 50.
Type *Panthus crassicornis* Walker.

Anaphoidea Girault, 1909, J.N.Y. ent. Soc. **17:** 167.
Type *Anaphoidea sordidata* Girault.

Anaphoides Enock, 1915, Hastings Nat. **2:** 181. *Nomen nudum.*

Antoniella Soyka, 1950, Ent. NachrBl., Burgdorf **3:** 121.
Type *Fulmekiella stubaiensis* Soyka. *New synonym.*

Mariella Soyka, 1950, Ent. NachrBl., Burgdorf **3:** 123.
Type *Mariella superaddita* Soyka. *New synonym.*

Distribution: Europe; Africa; North and South America; Trinidad; Australia.
Important references: Debauche (1948), Kryger (1934).

Comments: It has been indicated in the discussion of *Anaphes* (p. 19) that the authors regard the divided female antennal club of *Patasson* to be an adequate distinguishing character between the two genera. It is of interest to note that Debauche (1948) does not, that he divides *Anaphes* into two subgenera, *A.* (*Anaphes*) and *A.* (*Patasson*). There is something to be said for this conservative view, for reliable structural characters other than the divided female club are not apparent, at least not in the series of species known to the authors; this is especially true in respect of the males of many species. Of even greater interest is Soyka's (1946, 1949, 1950) treatment in which the species of these two categories are divided among no less than ten names each of which is given full generic status by that author. The generic characters used by Soyka are unusual for the Chalcidoidea, and, in the present authors' opinion, reflect at most subgenera or infrageneric species-groups, depending, at least provisionally, on the preferences of students of the group. It has been attempted to show this in the present discussion of *Anaphes* in respect of the four generic names involved in that case, namely, *Anaphes* (= *Mymar* of Soyka), *Ferrierella*, *Synanaphes* and *Stammeriella*. Soyka's treatment of the remaining six generic names, namely, *Patasson* (= *Anaphoidea* of Soyka), *Yungaburra* Girault, *Hofenederia* Soyka, *Fulmekiella* Soyka, *Antoniella* Soyka and *Mariella* Soyka has now to be discussed. A further name, *Schizophragma* Ogloblin has been included in the discussion in the belief that it, too, is probably a segregate of *Patasson* which lacks reliable and adequate generic characters.

In this study the authors have been fortunate in having had access to representatives of all the groups involved with the exception of *Antoniella* and *Mariella*. However, it is realised that this is not enough to provide a definitive treatment of the genus and it must be emphasized that this discussion offers only a provisional clarification of the nomenclatural confusion at present existing in the group. It has not been possible to make a careful morphological analysis of a long series of specimens and species and until this can be done it is not possible to be sure about the value at the generic or any other level of any one of the characters mentioned here in connection with the various categories within *Patasson* in the sense of this article.

The following categories are provisionally considered to be of value as subgenera, the diagnostic notes having been drawn from the literature and from material examined by the authors:—

1. Subgenus *Patasson*—Scape smooth; thorax thickset, not lengthened, without " interscutellum " (Soyka's term for the transverse, probably subcutaneous, division of the scutellum between the anterior sensorial part and the posterior shieldlike part of that sclerite); fore wings ordinarily narrow with the three hairless areas well defined; ovipositor ordinarily strongly produced beneath the thorax; male antenna 12-segmented excluding a minute sclerotization between the pedicel and the first funicle segment; propodeum usually with a median longitudinal suture.

2. Subgenus *Yungaburra*—like *Patasson* except that the male antenna has 13 segments, the third being small though larger than an ordinary ring-segment as seen in *Camptoptera* species.

3. Subgenus *Hofenederia*—prothorax and mesonotum lengthened, " interscutellum " longer than in other categories, fore legs attached at about the middle of the thorax; scape smooth; fore wings with three distinct hairless areas; male antenna 12-segmented.

4. Subgenus *Fulmekiella*—like *Patasson* except that the fore wings are narrow or broad and the scape always has cross-ridges on the inner surface in both sexes; ovipositor well developed, often produced anteriorly beneath the thorax as in *Patasson* (see Gahan, 1927).

5. Subgenus *Schizophragma*—posterior part of scutellum usually with a longitudinal suture; ocellar area separated from the vertex; occiput medially divided by a suture; male antenna 13-segmented, the third normal; radicle and scape confluent; mesophragma deeply or slightly emarginate posteriorly.

Of these five categories, the last would appear to be the most distinct; however, this may simply be the result of Ogloblin's (1949) more complete descriptions and illustrations of a series of species. An apparently undescribed species from South Africa has been seen which has characters of both *Fulmekiella* and *Schizophragma*, and several other species examined have the mesophragma slightly emarginate. With regard to the third segment of the male antenna which has been used as a generic character it may be noted that in certain species of *P.* (*Patasson*) and *P.* (*Fulmekiella*) the male antenna has a minute sclerotization between the second and third funicle segment; in *P.* (*Yungaburra*) *nitens* (Girault) there is a short but distinct segment while in *P.* (*Schizophragma*) species there is a well developed segment, the last two cases making the antenna 13-segmented. Apart from this character these groups apparently lack good non-adaptive generic characters for their separation (with the possible exception of *Schizophragma*).

Soyka (1950) proposed the genus *Antoniella* for those species of *Fulmekiella* like *F. stubaiensis* Soyka, the type of the new genus, in which the ovipositor is strongly produced anteriorly beneath the thorax. This condition appears in all degrees of development throughout the *Anaphes-Patasson* groups and this character cannot be regarded as a valid generic or even subgeneric one. Accordingly this genus is suppressed. Similarly, *Mariella* Soyka was introduced with the type *Mariella superaddita* Soyka for those species of " *Anaphoidea* Girault " [= *P.* (*Patasson*) of this article] in which the ovipositor is not produced anteriorly beneath the thorax. Likewise this name is suppressed. As remarked in the case of *Stammeriella* Soyka, if genera are acceptable on these grounds, then there is a precedent for placing in a new genus each species exhibiting one or more distinctive specific characters.

Genus PARANAPHOIDEA Girault

Paranaphoidea Girault, 1913, Mem. Qd. Mus. **2:** 107–129.
Type *Paranaphoidea egregia* Girault.

Distribution: Argentina; Australia.

Comments: Ogloblin (1935c) is the only worker who has recognized this genus. No material of this genus has been seen and on the available information only the strongly exserted ovipositor distinguishes its species from those of *Patasson*. If this is correct then *Paranaphoidea* may prove to be no more than a subgenus, at most, of *Patasson*.

Genus AUSTRALOMYMAR Girault

Australomymar Girault, 1929, Trans. roy. Soc. S. Austr. **53:** 343.
Type *Australomymar aurigerum* Girault.

Distribution: Australia.

Comments: Knowledge of this monotypic genus is based on the literature. It would appear to be recognizable and distinct on the basis of the greatly lengthened scape, undivided club, hind tibia provided densely with long hairs on the dorsal surface, and the extremely long ovipositor.

Genus SELENAEUS Waterhouse

Selenaeus Waterhouse, 1914, Trans. ent. Soc. Lond. (1914): 536–539.
Type *Selenaeus Turneri* Waterhouse.

Distribution: Tasmania.

Comments: This genus, the type species of which was examined in the BM collection, appears to be distinct on the basis of the six-segmented funicle and three-segmented club, as well as the extremely long ovipositor.

Tribe Mymarini

PTILOMYMAR new genus

Type *Ptilomymar rete* new species.

Eyes lateral, bare, with large ommatidia. Tarsi with four segments. Antenna of female with eleven segments, club well-developed, single-segmented. Ocelli present. Prothorax with normally placed sessile spiracles; prosternum small, triangular, closed anteriorly; mesoscutum without parapsidal sutures, without setae dorsally; scutellum with axillae not advanced, with sensilla each longitudinally shaped, directed outward and forming a small V-shaped figure; propodeum with two strong longitudinal subparallel carinae on the median slope of the segment, each one raised above the surface of the propodeum, their connection with that surface irregularly broken to form a fine network; spiracular setae strong, laterad of each spiracle, each one prodigiously branched. Petiole short, distinct. First gastral tergum with two carinae commencing at the petiolar insertion, reaching outward and upward on the steeply ascending slope of the sclerite, each one raised greatly off the surface of the tergum by a fine network; the same segment with a smaller third carina, placed longitudinally beneath the petiolar insertion, reaching caudad, similarly raised off the segment. In lateral view the gonostyli and ovipositor not straight, gently sinuate. Wings normal for family, marginal short, stigmal well-developed, radial process with four placoid sensilla, giving rise to a well-developed Rs; fore wing margin distinctly thickened.

The type species is described on p. 49–52 of this article.

Unfortunately the male of this remarkable genus is not known. However, the characters mentioned above, such as the branched propodeal setae and the number, nature and placement of the five carinae are sufficient to set the single known species apart from all others in the family.

Genus EUSTOCHUS Haliday

Eustochus Haliday, 1833, Ent. Mag. **1**: 269, 349.
Type *Mymar atripennis* Curtis.

Distribution: Europe.

Important references: Debauche (1948), Kryger (1950).

Comments: So far as is known this is a monotypic European genus. One of the authors (D.P.A.) examined two female specimens in the BM collection taken at Wytham, Berks., by G. C. Varley. The redescriptions of the genus

and species given by Debauche (1948) and Kryger (1950) make further descriptive notes here unnecessary. The genus is readily distinguishable from others by such characters as the wing venation which is carefully described by Debauche (l.c.), and the antenna. It may be noted that in the specimens examined, there appears to be no way of distinguishing the stigmal portion of the venation from the marginal: the former presents no discernible expansion into the wing.

Genus DORICLYTUS Foerster

Doriclytus Foerster, 1847, Linnaea Ent. **2:** 226.
Type *Doriclytus vitripennis* Foerster.

Distribution: Unknown, presumably European.

Comments: Soyka's (1956) redescription of *Doriclytus* has helped to make this genus better known. It is evidently related to *Polynema* and allies. However, Soyka (l.c.) gives no indication of the detailed structure of the propodeum, all-important in this group of genera, or of that of the thorax. In the present state of our knowledge no more can be done than maintain the genus distinct from others, if only on the basis of the prodigiously developed ovipositor (Soyka, l.c.).

Doriclytus has been entered in the key in two places, once allowing it a two-segmented club as described by Foerster (1847, 1856) and again with a solid club according to Soyka's (1956) redescription of a female specimen labelled by Foerster (supposedly the type female). Kryger (1950) and Hincks (1950) convincingly demonstrate that Enock's (1909) interpretation of *Doriclytus* was erroneous and probably based on a female *Polynema*. Whether or not the genus has a two-segmented club as repeatedly claimed by Foerster, the type species is probably recognizable from the species of other genera on the grounds of the middle and hind tarsi being longer than their tibiae, and the ovipositor which is strongly exserted and which forms a long loop internally at the base of the abdomen.

TANAOMYMAR new genus

Type *Tanaomymar mirum* new species

Eyes lateral, with a few minute setae, with small ommatidia. Tarsi with four segments. Antenna of female with nine segments, funicle four-segmented, club three-segmented, scape short, swollen medially. Head somewhat flattened dorsally, slightly produced anteriorly between the antennal insertions which are placed below the transversofrontal trabecula; ocelli present, rather large. Thorax with prothorax and mesoscutum extremely elongate, the former with normal, sessile spiracles at the posterolateral angles and the latter with entire parapsidal sutures lacking foveae anteriorly; scutellum longer than wide, rounded posteriorly, with axillar setae on the extreme anterolateral angles; axillae not clearly separated from the scutellum, not advanced; metanotum medially covered by the posterior margin of the scutellum. Propodeum greatly prolonged, produced subcylindrically caudad, with subparallel longitudinal grooves extending back to either side of the petiolar insertion which is adjacent to and slightly above the paired hind coxal insertions. Petiole very long and slender. Gaster with ovipositor normally developed, only slightly exserted posteriorly. Wings normal for the family, fore wing venation as in Fig. 27. Legs with hind coxae prodigiously lengthened, longer than middle femora.

The type species is described on p 52–54 of this article.

The female only of this remarkable genus is known. The extraordinary lengthening which certain parts of the only included species have experienced, together with the four-segmented funicle and the three-segmented club suffice to separate the genus from all others known to the authors.

Genus BRUCHOMYMAR Ogloblin

Bruchomymar Ogloblin, 1939, Physis **17:** 217–225
Type *Bruchomymar mirabilicornis* Ogloblin.

Distribution: Argentina.

Comments: The female antenna and the strongly pedunculate fore wings with their broadly concave hind margins and their distinctive venation as illustrated by Ogloblin (l.c.) serve to distinguish the species of this genus from all others known to the authors.

Genus STENOPTEROMYMAR Ferrière

Stenopteromymar Ferrière, 1952, Mitt. schweiz. ent. Ges. **25:** 41–43.
Type *Stenopteromymar biciliatus* Ferrière.

Distribution: Switzerland.

Comments: Known to the authors only from the description of two females of a single species, this genus presents characters which are remarkable for the family, namely small compound eyes, ocelli absent, fore and hind wings greatly reduced, and an enlarged pronotum—the latter being a feature commonly associated with flightlessness in the chalcidoids. These characters are so extraordinary that the relationships of the genus are difficult to define.

Genus RICHTERIA Girault

Richteria Girault, 1920. Some insects never before seen by mankind. Brisbane, Australia. Oct. 30. 3 pp. Privately published.
Type *Richteria lamennaisi* Girault.

Distribution: Australia.

Comments: This genus is known to the authors and Soyka (1956) only from Girault's (l.c.) very sketchy description. The authors have keyed it out on the curious combination of normally broad fore wings and reduced, filiform hind wings. Its position may be artificial and reflect false relationships.

Genus MYMAR Curtis

Mymar Curtis, 1832, Brit. Ent. **9:** 411.
Type *Mymar pulchellus* Curtis.

Pterolinononyktera Maláč, 1943, Folia ent., Brno **6:** 51.
Type *Pterolinononyktera obenbergeri* Maláč. *New synonym.*

Oglobliniella Soyka, 1946, Zbl. Gesamtgeb. Ent. **1:** 180.
Type *Mymar pulchellus* Curtis.

Mymarilla of authors, not Westwood, 1879.

Distribution: Europe; Africa; Eastern North America; South America (Brazil); Australia; Guam; India; Ceylon.

Comments: The history of this genus is one of confusion, which is unfortunate since its species are beautiful insects, readily distinguishable from other Mymaridae. During 1959 one of the authors (D.P.A.) wrote to Dr. A. A.

Ogloblin asking for help with regard to the synonymy of this genus, since a South African form had been collected in some numbers and a determination was desired. Ogloblin's reply included a history of the genus and concluded with the astonishing observation that, depending on whose opinion was followed, any one of the following generic names might be applied to the South African species: *Mymar* Curtis, *Mymarilla* Westwood, *Pterolinononyktera* Maláč, or *Oglobliniella* Soyka. Hincks (1944) indicates that *Flabrinus* Rondani might be a likely candidate, too.

In view of this confusion surrounding the application of the name *Mymar* the following summarized account (taken partly from Ogloblin in correspondence with D.P.A.) of the history of the genus is offered, in order to elucidate and, in part, justify the authors' view.

1829: Curtis (Guide to Brit. Ins. **112:** 586) mentions " *Mymar pulchellus* Walker ".

1832: Curtis (Brit. Ent. **9:** 411) describes and figures the genus based on *Mymar pulchellum*, but designates *Ichneumon punctum* Shaw, 1798, as " Type of the genus "; he states in a note that the " dissections and descriptions are taken from the species figured ", and this figured species is *M. pulchellum*.

1833: Haliday (Ent. Mag. **1:** 349) describes the genus *Mymar* based on *M. pulchellum*, and refers *Ichneumon punctum* Shaw to his new genus *Anaphes*.

1839: Westwood [Introd. Mod. Classif. Ins. **1** (Synopsis): 78] follows Haliday (1833) and designates " *Mymar pulchellus* Curt." as the type of *Mymar*.

1846: Walker (Ann. Mag. nat. Hist. **18:** 49–54) follows Haliday (1833).

1847: Foerster (Linn. Ent. **2**: 224) follows Haliday (1833).

1856: Foerster (Hym. Stud. **2**: 120) follows Haliday (1833).

1879: Westwood (Trans. Linn. Soc. Lond. (2) **1:** 583–593) uses the name *Mymar* when redescribing *M. taprobanicum* Ward and for a new species, *wollastonii*; in a footnote he proposes the new generic name *Mymarilla* for the latter species.

1904: Ashmead [Mem. Carneg. Mus. **1** (4): 364] cites " *M. pulchellus* Hal." as the type of " *Mymar* Haliday ".

1911–17: Girault (various papers) applies the name *Mymar* in the sense of Haliday (1833).

1923: Gahan & Fagan (Bull. U.S. nat. Mus. **124:** 92) recognize the original citation of *Ichneumon punctum* Shaw as the correct type of " *Mymar* (Haliday) Curtis ", and place *Anaphes* Haliday in synonymy as an isogenotypic genus.

1943: Maláč (Folia Ent., Brno **6:** 51) describes *Pterolinononyktera* n. gen. which is evidently a synonym of *Mymar* in the sense of Haliday (1833).

1944: Hincks [Proc. R. ent. Soc. Lond. (B) **13:** 38] analyses the situation and concludes that Curtis' designation of *I. punctum* as type of *Mymar* was incorrect since it belongs in a different genus (namely, *Anaphes* Haliday) and since the description and figures accompanying this designation have reference to *M. pulchellum*; he says " Westwood's designation of *M. pulchellus* is therefore valid and should be followed as hitherto."

1945: Kloet & Hincks (A check list of British insects: 304) implement Hincks' (1944) view.

1946: Soyka (Zbl. Gesamtgeb. Ent. **1:** 181) proposes *Oglobliniella* as a new name for *Mymar* evidently overlooking Maláč's (1943) name.

1948: Debauche (Mem. Mus. Hist. nat. Belg. **103:** 232–239) applies the name *Mymar* in the sense of Haliday (1833); he observes in a footnote (p. 155) that Curtis' designation of *I. punctum* as type had at that time a meaning, namely merely an example, quite different from the modern connotation.

1949: Gahan (J. Wash. Acad. Sci. **39:** 204–205) gives a detailed critique of Hincks' view, and states that in terms of the rules of nomenclature Hincks' proposals are unacceptable; he also criticizes Soyka's stand and holds that until it can be shown that the species *wollastonii* Westwood and *pulchellum* Curtis are not congeneric, the name *Mymarilla* should be used for *pulchellum* and congeners; he holds, too, that Curtis' (1832) description was broad enough to include both *punctum* and *pulchellum*.

1950: Kryger (Ent. Medd. **26:** 71–74) applies the name *Mymar* in the sense of Haliday (1833) and Hincks (1944).

1951: Peck (in Muesebeck *et al.* U.S. Dep. Agric. Monogr. **2:** 418) implements Gahan's (1949) view.

1952: Hincks (Trans. Soc. Brit. Ent. **11** (7): 153–163) discusses Soyka's (1949) application of the name *Mymar* to *punctum*-like forms and points out that Curtis' original type designation is equivocal and taxonomically untenable since his illustrations and description refer not to *punctum* but to *pulchellum*; he also states that he proposes to apply to the International Commission of Zoological Nomenclature petitioning that " *Mymar* Curtis, 1832, generotype *M. pulchellus* Curtis, be placed on the Official List of Generic Names ".

1955: Soyka (Mitt. münch. ent. Ges. **44/45:** 460–475) applies the name *Mymar* to *punctum*-like forms in accordance with the Gahan view.

1955: Doutt [Ins. Micronesia **19** (1): 12] uses *Mymarilla* in accordance with the Gahan view.

1958: Burks [in Krombein *et al.* U.S. Dep. Agric. Monogr. (First Suppl.) **2:** 63] follows the usage in the Muesebeck (1951) catalogue.

Soyka (1955) introduces a further argument into the controversy, namely, that *Mymar* as applied to *pulchellum* and congeners is an unsuitable name from which to derive the family name since it applies to insects which are not typical of the family. This argument must of course be rejected or one would be faced with a large number of analogous changes in other families of insects where there is more than one genus described in the family; moreover there is no such requirement in the rules of nomenclature.

It is possible to adduce two new and important facts which have a bearing on this controversy. Firstly, as discussed on p. 31, an examination of the types of *Mymarilla wollastonii* Westwood has revealed that there are no grounds whatever for supposing that *Mymarilla* is available as an alternative name for *pulchellum* and congeners as suggested by Gahan (1949) and as accepted by various authors since that time. Secondly, Gahan (l.c.) states that *Oglobliniella* Soyka is the next available name if it be shown that *Mymarilla* cannot be used; however, Dr. A. A. Ogloblin (personal communication to D.P.A.) has drawn attention to the nomenclatural monstrosity, *Pterolinononyktera* Maláč which antedates Soyka's *Oglobliniella* by some three years. In the authors' opinion there is no question but that Maláč's name was used in connection with a female specimen congeneric if not conspecific with *pulchellum* Curtis, and this name is therefore consigned to synonymy with some relief. Now, however, if the proposed synonymy be correct, Maláč's name will have to be used by the followers of the Gahan

view. It will be unfortunate indeed if the well-known and attractive *pulchellum* has to become saddled with the cumbersome name *Pterolinononyktera.*

In this connection it must also be noted that *Flabrinus* Rondani is not included as a generic synonym of *Mymar*. The reasons for this are given under that genus on p. 37.

In the authors' view, then, as reflected in the above synonymy and discussion, the name *Mymar* Curtis should be applied to *pulchellum* and congeneric species; Curtis' original designation of *Ichneumon punctum* Shaw as type of *Mymar* should be disregarded and Westwood's type designation (Westwood 1839) should be accepted. In effect, the views of nearly all the modern specialists in the group are therefore supported and it is intended to communicate this support to the proper quarter in order to strengthen the proposed petition by Hincks (1952, p. 163) to the International Commission of Zoological Nomenclature.

Genus NEOMYMAR Crawford

Neomymar Crawford, 1913, Proc. U.S. nat. Mus. **46**: 343–352.
Type *Neomymar vierecki* Crawford.

Distribution: Eastern North America.

Comments: Material of this and other apparently undescribed species (det Gahan) in the USNM collection has been examined. The authors' notes have been taken from a specimen collected and beautifully mounted by Ogloblin and from a specimen collected and mounted by Dozier. Ogloblin's specimen was taken at Ames, Iowa on 22.10.1943 and Dozier's at Newark, Del., July 11, 1928; both agree closely with the type female of *vierecki.*

Ogloblin (1946) has noted that the prothoracic spiracle of *Neomymar* is stalked. This appears to be the case with all the specimens examined and provides a useful distinguishing character for the genus. The short scape, not medially constricted, is a further aid in separating this genus from *Mymar* Curtis. The prothorax in dorsal view is equipped with about 11 and 11 strong setae, 4 and 4 of which are situated in a longitudinal row on either side of the median prothoracic suture; parapsides each with a laterally placed and a more medially placed seta; axillar setae 1 and 1, long and slender, placed close to the transverse scutoscutellar suture and reaching the hind margin of the scutellum; metanotum with 1 and 1 small setae at about the level of the propodeal spiracles; propodeum with 1 and 1 strong setae placed caudally, just above the hind coxal insertions. In general, it may be said that the thorax of *Neomymar* is structurally very similar to that of *Mymar*. The fore wings of the two genera are strikingly similar, too, though those of *Mymar* species are more markedly stalked, the stalk almost entirely taken up by the venation, while in *Neomymar* there is usually a narrow membranous part along the caudal margin; in *Neomymar*, furthermore, the stalk is not as long, relatively, as in *Mymar*.

Genus ERDÖSIELLA Soyka

Erdösiella Soyka, 1956, Abh. zool.-bot. Ges. Wien **19**: 1–115.
Type *Erdösiella acarensis* Soyka.

Distribution: Brazil.

Comments: The remarkably developed distal segments of the female funicle distinguish this genus from all other known mymarid genera.

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Genus ONCOMYMAR Ogloblin

Oncomymar Ogloblin, 1957, Rev. chil. Ent. **5**: 413–444.
Type *Oncomymar dipteron* Ogloblin.

Distribution: Juan Fernandez Islands.

Comments: This genus is a recent addition to the remarkable fauna of the Juan Fernandez Islands off the coast of Chile. It is unfortunately known only from a single male specimen which has been described in detail by Ogloblin (l.c.). Its author places the genus in his tribe Cremnomymarini with *Cremnomymar* Ogloblin, *Nesopolynema* Ogloblin, and *Scolopsopteron* Ogloblin. *Oncomymar* is the only genus known to the authors other than the anomalous *Stenopteromymar* and *Mymaromma* in which the ocelli are lacking.

Genus SCOLOPSOPTERON Ogloblin

Scolopsopteron Ogloblin, 1952, Rev. chil. Ent. **2**: 119–138.
Type *Scolopsopteron kuscheli* Ogloblin.

Scolopsomymar Ogloblin, 1957, Rev. Chil. Ent. **5**: 414.
Lapsus for *Scolopsopteron* Ogloblin.

Distribution: Juan Fernandez Islands.

Comments: Like the foregoing genus. *Scolopsopteron* is known only from the male sex, and is peculiar, so far as is known, to the same islands. The fore wings have a strange shape not found in any other mymarid, and this together with the abbreviated hind wing suffices to distinguish the genus from all others.

Genus NESOPOLYNEMA Ogloblin

Nesopolynema Ogloblin, 1952, Rev. chil. Ent. **2**: 119–138.
Type *Nesopolynema caudatum* Ogloblin.

Distribution: Juan Fernandez Islands.

Comments: This is a third of four genera so far recorded only from the Juan Fernandez Islands. *Nesopolynema* appears to be distinct from related genera on such characters as the divided pronotum and the carinate structure of the propodeum.

Genus PALAEONEURA Waterhouse

Palaeoneura Waterhouse, 1914, Trans. ent. Soc. Lond. (1914): 536–539.
Type *Palaeonura Turneri* Waterhouse.

Distribution: Tasmania.

Comments: This *Polynema*-like genus with three described species is known only from Tasmania, and may be recognized by the long vein-like extension along the cephalic margin of the fore wing, and by the propodeum which lacks distinct carinae. Waterhouse (l.c.) does not explain the nature of the vein-like extension in the fore wing, but an examination of the type material of the three described species in the BM collection shows that it commences at the extreme tip of the stigma and therefore appears to represent, properly speaking, the vein Rs of other Hymenoptera (Burks, 1938; Richards, 1956). Additional notes drawn up from the material in the BM collection are given in the hope that the genus will be more readily recognizable.

Prothorax in dorsal view with a median longitudinal suture, distinct anteriorly, fading posteriorly, with sessile spiracles at the posterolateral angles, and with stout, blunt setae on the dorsal surface; prosternum closed

anteriorly; mesoscutum with complete parapsidal sutures, lacking foveae anteriorly; scutellum with a transverse posterior row of foveae; metanotum partly covered by the scutellum in dorsal view. Without an examination of the propodeum under the high power of a modern microscope it is not possible to be sure about its detailed structure; the only discernible keel in *turneri* is an indistinct, short median one ascending the posterior slope of the propodeum for a short distance from the base of the petiole. The propodeum of all the specimens examined appears to lack the distinctive, carinate structure described for species of *Cremnomymar* by Ogloblin (Ogloblin, 1952, 1957b), and for this reason the authors cannot agree with Soyka (1956, p. 4) that *Cremnomymar* is a synonym of *Palaeoneura*. An additional difference between the two genera lies in the structure of the radial process: in *Cremnomymar* the process is poorly or not developed while in *Palaeoneura* it is quite strongly developed and carries the three or four linearly arranged distal sensilla. This process is also more strongly developed in *Palaeoneura* than in all *Polynema* species known to the authors.

Genus CREMNOMYMAR Ogloblin

Cremnomymar Ogloblin, 1952, Rev. chil Ent. **2**: 119–138.
Type *Cremnomymar fernandezi* Ogloblin.

Distribution: Juan Fernandez Islands.

Comments: The four described species of this genus may readily be distinguished from related mymarine genera on the peculiar structure of the propodeum as illustrated and described by Ogloblin (1952, 1957b). The proposed synonymy of this genus with *Palaeoneura* is not accepted for reasons given above under that genus.

Genus MYMARILLA Westwood

Mymarilla Westwood, 1879, Trans. Linn. Soc. Lond. **1** (2): 583–593.
Type *Mymarilla wollastonii* Westwood.

Distribution: St. Helena Island.

Comments: Mymarilla has been regarded as an available alternative name for *Mymar pulchellum* Curtis and congeners (Gahan, 1949; Peck, 1951). Westwood's type material was located by one of the authors (D.P.A.) with the help of Dr. M. W. R. de V. Graham in the Hope Department of Entomology, Oxford, during a brief visit in July, 1960. An examination of this material (a male and a female specimen mounted on card-points) as well as of two females in the BM collection (also on card-points) has revealed that *Mymarilla* is a remarkable genus quite distinct from, and probably not closely related to, *Mymar* Curtis. These findings had already been expected, for Westwood's description and drawings (Westwood, l.c.) do not really suggest a specific relationship to a species of *Mymar* in spite of the fact that he assigns *wollastonii* to *Mymar* in the text while only as an afterthought, apparently, proposing the new generic name, in a footnote on the same page.

The following notes are drawn up partly from the BM material, and partly from Westwood's type female at Oxford (here designated the lectotype) and partly from his male type (here designated the lectoparatype). The BM females are not designated as lectoparatypes since it is not certain that Westwood had them before him when describing the genus and species. All the specimens mentioned were collected by Wollaston on the island of St. Helena, and there is no doubt that the BM material and the Oxford material belong to the same species.

Female.—Antenna nine-segmented, club simple; scape slender, slightly swollen basad of the middle, tapering gradually apically, nearly three times as long as the pedicel; the latter slender, widening distally to about twice its basal width; funicle I a little longer than the pedicel; II nearly twice as long as I; III longer than II (about 13: 10); IV about as long as I, shorter than III (about $6\frac{1}{2}$: 10); V and VI about equal in length, each longer than IV (each about $7\frac{1}{2}$: $6\frac{1}{2}$); funicle becoming only slightly wider distally, VI being only about one-and-a-half times as wide as I; club barely more than twice as long as funicle VI (about 16: $7\frac{1}{2}$), widening distally, not quite three times as wide as funicle VI at the widest point, namely at the start of the last third of its length, the tip bluntly accuminate; segments of antennae sparsely and finely setose, longitudinal sensoriae visible only on the club.

Prothorax strongly developed, the pronotum in dorsal view about as long as the well developed scutellum; mesoscutum weak, transverse, with greatest median length about one-third that of scutellum; parapsides clearly separated from mesoscutum; scutellum longer than wide, and, like the rest of the thorax, smooth and shining; metanotum scarcely visible dorsally, forming a narrow crescent-shaped band which bends forward laterally towards the hind wing insertions; propodeum smooth and shining, well developed, about as long medially as the pronotum, without keels. Fore wings very strongly convex on the dorsal surface, the corresponding ventral concavity being nearly as deep as the greatest width of the wing; apically the wing is truncate, suggesting that the wings may be used for floating on air-currents, the semicircular apical truncation providing an air-escape or spillway which may possibly be regulated by an adjustment of the angle of the wing; venation similar to that of *Polynema* species, marginal punctiform, greatly swollen (more so than in *Polynema*), strongly sclerotized, extending to only just beyond the abbreviated peduncle of the wing; margins and disc very densely and finely pubescent, the longest setae as long as or longer than the first funicle segment; hind wing narrow, pedunculate, flat, densely pubescent, the margins subparallel, apically acuminate. Tarsi four-segmented.

Gaster smooth and shining, separated from the propodeum by a long and slender petiole; with, apparently, the first gastral segment occupying about two-thirds of the length of the dorsum, the lateral parts of it and the following tergites forming a deep sheath or cleft in which the ovipositor and gastral sternites are hidden; gonostyli barely visible apically.

This remarkable genus, like some of the island forms from the Juan Fernandez Islands, presents some extraordinary modifications. The genus appears, at least on the basis of its wing-venation, to have some relation with *Polynema* and allied genera. However, until properly treated slide-mounted material is available, a more critical study is not possible, and little can be said with assurance about its relationships at this time.

Genus CARAPHRACTUS Walker

Caraphractus Walker, 1846, Ann. Mag. nat. Hist. **18:** 49, 50, 52.
Type *Caraphractus cinctus* Walker.

Distribution: Europe to Russia; Eastern North America.

Important reference: Jackson (1958).

Comments: This genus is well known for the remarkable aquatic habits of *C. cinctus*. The following descriptive notes are drawn up from material in the USNM collection, namely, two males slide-mounted by Fred Enock, one

laterally and one dorsally, and a male and female of the brachypterous form slide-mounted by Rimsky Korsakov and bearing the determination *Caraphractus reductus* Rimsky Korsakov.

Male and Female.—In dorsal view, head and thorax including all coxae and femora, and petiole strongly reticulate, each reticulation irregularly pentagonal or hexagonal, slightly larger on the posterior part of the scutellum.

Head with small ocelli, each about as large as two or three reticulations, widely separated, placed at the angles of an obtuse-angled triangle; head strongly sclerotized, about twice wider than long in dorsal view; eyes placed anterolaterally, rather small.

Prothorax with an indistinct median suture, laterally hidden beneath the mesoscutum; the latter with variably distinct parapsidal sutures which reach the scutoscutellar suture posteriorly and which diverge only slightly anteriorly; axillae not advanced; scutellum distinctly divided transversely into a narrow anterior part, about as wide as long, and a much wider posterior part, about twice as wide as long; metanotum a distinct, heavily reticulated, crescent-shaped band. Propodeum with paired longitudinal keels extending caudad to either side of the base of the petiole; the latter not twice as wide as long. In lateral view, mesopleura strongly developed, prepectus reaching up on either side as a narrow plate curving slightly forward, dorsally truncate; petiole wider apically than basally in this view.

Wings, when developed, with cephalic margin curved, concave along the base of the venation, convex beyond the venation; caudal margin less noticeably curved, nearly straight except for the widened part at the level of the venation; marginal and stigmal veins together about three-quarters, or a little more, as long as the submarginal; venation about one-third as long as the wing; proximal macrochaeta near the base of the marginal vein, distal macrochaeta not quite halfway along the length of the marginal, the hypochaeta placed on the wing-margin basad of the proximal macrochaeta; proximal sensillum between the distal macrochaeta and the distal group of sensilla, slightly closer to the former; radial process weakly developed, the four distal sensilla grouped in a row at the tip of the stigma; postmarginal and Rs wanting. Gaster apically acuminate, the gonostyli and ovipositor exserted for about one-quarter of the length of the gaster.

Genus TETRAPOLYNEMA Ogloblin

Tetrapolynema Ogloblin, 1946, Iowa St. Coll. J. Sci. **20** (3): 277–295.
Type *Tetrapolynema mexicanum* Ogloblin.

Distribution: Mexico.

Comments: Although this genus is known only from a single male specimen it appears to be readily distinguishable on the basis of its broad parapsidal sutures and the longitudinal furrow on the scutellum. An examination of the male holotype in the USNM collection has revealed some details of the venation which may be helpful in recognizing the genus; marginal vein not punctiform as in *Polynema*, confluent with the stigmal which lies in the same direction; radial process well developed, without an extension (Rs) into the wing; postmarginal lacking; marginal and stigmal together about as long as the third antennal segment; proximal and distal macrochaetae widely separated, the hypochaeta on the cephalic wing-margin close to the base of the former and the proximal sensillum close to the base of the latter; the four distal sensilla in a tight, curved row at the end of the stigma; subcostal vein

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connecting obscurely with the marginal; a strongly developed vein-like thickening present in the blade of the wing beneath the subcostal commencing at the wing-base and curving gently to join broadly with the caudal border of the marginal vein.

Genus CHAETOMYMAR Ogloblin

Chaetomymar Ogloblin, 1946, Iowa St. Coll. J. Sci. **20** (3): 277–295.
Type *Chaetomymar kusnezovi* Ogloblin.

Distribution: East Siberia; South Africa.

Comments: The genus was described from a single female collected in East Siberia. One of the authors (D.P.A.) has collected a second species described in this paper from various localities in South Africa. The male sex is now known and the following notes are drawn up from the South African species, the generic placing of which was kindly confirmed by Dr. A. A. Ogloblin, in the hope that the genus will be more readily recognizable: fore wing (Fig. 32 and 34) with a short marginal vein, similar to that of *Polynema*; macrochaetae weak, the proximal one on the cephalic margin of the vein, the distal one in the middle of the vein and closer to the distal group of five placoid sensilla than to the proximal macrochaeta; hypochaeta strong, arising from the cephalic wing-margin near the start of the marginal vein, close to but cephalad and basad of, the proximal macrochaeta; postmarginal vein strong, arising on the cephalic margin of the marginal vein near the distal macrochaeta; along the caudal margin of the wing-base is a vein-like thickening extending from near the base in a gentle curve to the caudal margin of the marginal vein with which it is broadly joined; discal setae scattered through the distal two-thirds of the wing except for a nearly hairless streak extending from the venation along the cephalic margin to near the wing-tip. Male with antenna of thirteen segments, otherwise similar to the female except for sex differences in the abdomen.

Genus ACMOPOLYNEMA Ogloblin

Acmopolynema Ogloblin, 1946, Iowa St. Coll. J. Sci. **20** (3): 277–295.
Type *Stichothrix bifasciatipennis* Girault.

Distribution: North and South America; Africa; Philippine Islands.

Comments: Ogloblin's (1946) description and drawings of this genus make it readily recognizable. The type material in the USNM collection has been examined as well as material of several other species, some of which including an African one, are apparently undescribed. The propodeal characters figured and described by Ogloblin (l.c.) facilitate recognition of the genus, though it must be pointed out that in some species it will be well to study the insects in lateral view since in a dorsal slide-mount the median propodeal tooth may be mistaken for the stem of a " Y ", a condition found, for example, in *Nesopolynema*. Some species of *Acmopolynema* represent probably the largest Mymaridae, and the strongly developed, maculate wings of several species add to their rather striking appearance.

Genus STEPHANODES Enock

Stephanodes Enock, 1909, Trans. ent. Soc. Lond. (1909): 449–459.
Type *Stephanodes elegans* Enock.

Distribution: Europe; Africa; North America; Mariana Islands (Saipan).

Important reference: Hincks (1950).

Comments: This attractive genus has been placed in synonymy with *Polynema* Haliday by Debauche (1949) and Peck (1951). Hincks (1950) maintains it as a distinct genus although he points out that Girault's (1911b) observation may prove correct, that the genus may intergrade with *Polynema* when all its species are taken into account. The authors have studied the European species, *S. similis* (Foerster) [specimens in R.L.D.'s collection and in the USNM collection determined by Soyka as *Polynema ovulorum* (L.)], a North American species, a species from the South Pacific which is near if not *S. similis*, and two South African species of which at least one is undescribed; all these show clearly the asperate scape, as well as a second character which is regarded as generically important, namely, the prothoracic spiracles are not located at the posterolateral angles of the pronotum in dorsal view but cephalad and mesad of this position on the line separating the pronotum from the mesoscutum. This position of the prothoracic spiracles separates the species of this genus immediately from all the species of *Polynema* known to the authors, and indeed from all other genera known, and for this reason *Stephanodes* is regarded as a good and useful generic category.

Genus GRANGERIELLA Soyka

Grangeriella Soyka, 1956, Abh. zool.-bot. Ges. Wien **19:** 1–115.
Type *Grangeriella indochinensis* Soyka.

Distribution: Saigon (Indochina).

Comments: This genus is known to the authors only from the original description. Although Soyka (l.c.) has associated this genus with genera related to *Polynema*, the present authors are unable to satisfy themselves from his description either that the genus is properly placed or that it deserves generic status. However, they accept provisionally Soyka's (l.c.) placement and follow his suggestion of distinguishing the genus by the presence of two distinct rows of discal setae on the basal two-thirds of each fore wing.

Genus BARYPOLYNEMA Ogloblin

Barypolynema Ogloblin, 1946, Iowa St. Coll. J. Sci. **20** (3): 277–295.
Type *Barypolynema reticulatum* Ogloblin.

Distribution: North and South America; South Africa.

Comments: Ogloblin (l.c.) has adequately described and figured this genus. It has been pointed out (see under *Polynema*, p. 35) that *Polynema* species have a median propodeal keel or at least a rudimentary or vestigial keel or tooth on the propodeum. The species of *Barypolynema* studied in the USNM collection, namely, *saga* (Girault) and *aspidioti* (Girault), as well as a long series of specimens from South Africa which the authors are unable to distinguish from *saga*, and a new species (p. 57) from North America, have no keel or tooth on the propodeum. On this ground *Barypolynema* is at present maintained as a distinct generic category although the authors are not completely satisfied that the species of the two genera will not ultimately be found to intergrade when all the described and as yet undescribed forms are taken into account. The present authors are opposed to restricting the application of *Barypolynema* in the way proposed by Soyka (1956, pp. 3–4), and do not agree with his remarks on *saga*, which species he declares not to belong to *Barypolynema* in view of the proportions of the scutellum. Unlike Soyka (l.c.) the authors are not satisfied that the proportions of length and width of a thoracic sclerite are adequate grounds for defining a genus.

Genus POLYNEMA Haliday

Polynema Haliday, 1833, Ent. Mag. **1**: 347.
Type *Eutriche gracilis* Nees.

Eutriche Nees, 1834, Hym. Ichn. Aff. Monogr. **2**: 186.
Type *Eutriche gracilis* Nees.

Callitriche Agassiz, 1848, Nomencl. Zool. Index Univ.; 173, 439.
Emendation. Preoccupied.

Cosmocoma Foerster, 1856, Hym. Stud. **2**: 117, 120.
Unnecessary new name.

Valkerella Westwood, 1878, Proc. Linn. Soc. Lond. (Zool.) **1**: 584.
Type *Polynema natans* Lubbock.

Walkerella Westwood, 1883, Trans. ent. Soc. Lond. (1883): 32.
Type *Walkerella temeraria* Westwood.

Maidliella Soyka, 1946, Zbl. Gesamtgeb. Ent. **1** (4–5): 178.
Type *Maidliella neofuscipes* Soyka. *New synonym.*

Novickyella Soyka, 1946, Zbl. Gesamtgeb. Ent. **1** (4–5): 179.
Type *Polynema gracilior* Soyka.

Distribution: Europe to Russia; Africa; Seychelles Islands; North America; Juan Fernandez Islands (possibly introduced); Hawaii; Fiji; Australia; St. Vincent; Puerto Rico; Philippine Islands.

Important references: Soyka (1946, 1956), Hincks (1950).

Comments: The concept of *Polynema* is derived from the study of many species of European, American and African origin as well as from the literature, and it is particularly coloured by Hincks' (1950) patient and detailed analysis of the British forms of this and related genera. In his work Hincks (l.c.) was at pains to refer to the original typical material wherever possible, and it is believed that his interpretation is as sound as any available.

In the authors' view *Polynema* has, in general in the females, the following characters: (1) a definite median keel on the propodeum, varying in length from one which starts at the anterior margin of the propodeum and extends back to the posterior margin, to one which is present only as a very short median process at the posterior margin above the petiole; (2) a short first funicle segment, usually shorter than the pedicel or, if not, then only slightly longer; and (3) prothoracic spiracles sessile, placed at the posterolateral angles of the pronotum in dorsal view, projecting slightly laterally in this view as membranous, cup-like organs (this character distinguishes the genus at once from *Stephanodes*). Soyka's (1956) analysis of *Polynema* and related genera deserves attention; it gives, in the authors' opinion, undue weight to such characters as the transverse row of foveae on the scutellum, to the presence of cross-ridges on the scape, and especially to the relation of width and length of the scutellum. The authors differ from Soyka (l.c.) in that they regard the first character mentioned above as of prime importance in identifying *Polynema*, and to a lesser extent the second, too. They have examined nine species of *Novickyella* (det. Soyka, in R.L.D.'s collection) and agree with Soyka (1956) that this genus is not distinct from *Polynema*. In this same collection are two specimens labelled *Polynema ovulorum* (L.) by Soyka—these are in fact *Stephanodes similis* (Foerster). In D.P.A.'s South African material there is a series of males and females of a species described on p. 60 which has a short but distinct median keel, a short first funicle segment, a scutellum about as long as wide, a transverse row of foveae on the

scutellum, and distinct cross-ridges on the scape of both sexes. This species keys out at couplet 6 of Soyka's generic key (Soyka, l.c., p. 5), and if the foveae on the scutellum are disregarded, it keys out at *Nesopolynema* from which it is obviously distinct on propodeal characters. Hincks (1950) figures four British species as having a median longitudinal suture on the pronotum, similar to the South African species, and this is believed to be typical for all *Polynema* species. The Soyka material examined is all laterally mounted and in only two of these can a suggestion of such a pronotal suture be found, though it is believed to be present in all the specimens. Following Soyka's key then, the South African species would presumably have to be placed in a new genus since it has some characters regarded by him to be of generic value of *Maidliella*, *Polynema*, *Nesopolynema*, and *Barypolynema*, while differing from all these genera in other similar characters or in combinations of such characters.

This South African species has been treated in some detail in order to demonstrate what is believed to be the unreliability at the generic level of such characters as Soyka (l.c.) uses for *Maidliella* and other genera. For these reasons *Maidliella* is placed in synonymy with *Polynema*. The authors are less sure of their ground with *Barypolynema*, a discussion of which is given on p. 35. Finally, they are unaware of any reason for supporting Girault's (1911b) synonymy of *Stephanodes* with the present genus when the peculiarly placed prothoracic spiracles of that genus are taken into account.

Polynema, however it is interpreted, is a large genus, and at the subgeneric level such categories as *Maidliella*, in which the scape is furnished with cross-ridges, can serve a useful purpose in breaking up the genus into more easily manageable groups. As stated above the present authors are disinclined to accord such groups generic status unless more satisfactory characters can be found for their separation.

Unplaced Genera

The foregoing analysis concludes the study of those forms sufficiently well-known for inclusion in the generic key. There remain the following three poorly known genera.

Genus FLABRINUS Rondani

Flabrinus Rondani, 1877. Bull. Soc. ent. Ital. **9**: 180–181.
Type *Flabrinus fabarius* Rondani.

Comments: Debauche (1948) and Gahan (1949) throw some doubt on Ashmead's (1904) view that this monotypic, poorly described genus was erected for a species congeneric with *Mymar pulchellum* Curtis. The present authors agree, and would go further: Rondani's brief description and rather poor drawing both indicate that the species lacks a petiole (l.c., p. 180 " abdomen sessile depressum "). This would remove the insect altogether from the tribe Mymarini. Until further information on this insect becomes available there seems to be no alternative to maintaining the genus as valid and distinct from others known to the authors. The lack of information on the tarsal and antennal segments makes it impossible to include it in the key.

Genus MALFATTIA Meunier

Malfattia Meunier, 1901. Ann. Soc. sci. Brux. **25** (2): 287.
Type *Malfattia Molitorae* Meunier.

Comments: This fossil genus was synonymized with *Litus* Haliday by Ashmead (1904, p. 380) although he evidently had doubts about this synonymy (l.c., p. 362). Nothing can be found in Meunier's description or figures which supports Ashmead's view. Without further examination of the fossilized material no guesses can be hazarded regarding the relationships of the genus.

Genus PALAEOMYMAR Meunier

Palaeomymar Meunier, 1901. Ann. Soc. sci. Brux. **25** (2): 288–289.
Type *Palaeomymar succini* Meunier.

Comments: Meunier's description and figures of the fossilized type material do not suggest a relationship with *Ooctonus* Haliday, as noted tentatively by Ashmead (1904). Despite Meunier's assertion that it is related to *Mymar* the present authors cannot be sure, without having examined the type material of this genus, that it does not belong in the Proctotrupoidea.

Genera incorrectly assigned to the Mymaridae

So far as can be determined the following genera have been mistakenly placed in the Mymaridae.

Genus ANTHEMUS Howard

Anthemus Howard, 1896. Proc. U.S. nat. Mus. **18:** 633–648.
Type *Anthemus chionaspidis* Howard.

Comments: Originally described as a mymarid, this genus has been correctly taken up in the Encyrtidae, subfamily Antheminae (Ferrière, 1953).

Genus GOETHEANA Girault

Type *Goetheana shakespearei* Girault.

Goetheana Girault, 1920. Insec. Inscit. Menstr. **8:** 97.
Type *Goetheana shakespearei* Girault.

Comments: Originally described as a mymarid, this genus has remained unrecognized until Girault (1930) synonymized *Dasyscapus* Gahan (1927) with *Goetheana.* A comparison of males and females in the United States National Museum of *D. parvipennis* Gahan collected by E. McC. Callan in Venezuela, with Girault's description of *Goetheana* would indicate that Girault's synonymy is probably correct. *D. parvipennis* presents certain features which, superficially, might suggest a mymarid relationship, such as the rather narrow fore wings with long marginal fringes, but the details of its thorax, as well as its peculiar venation, show that Gahan's placement of the genus in the omphaline eulophids is probably correct.

Genus METAMYMAR Riley

Metamymar Riley, 1885, 4th Rept. U.S. Ent. Comm. app. 107, 104.
Type *Metamymar aleurodis* Riley

Comments: This name was used by Riley (l.c., app. 107) as a " MS genus " name; his description (p. 104) would indicate that the species, the types of which cannot be located in the USNM, belongs in all probability in *Encarsia* Foerster, an aphelinid genus.

Genus MICROMYMAR Risbec

Micromymar Risbec, 1950. J. Trav. Lab. Ent. Sect. soudan. Rech. agron. **2:** 622.

Type *Micromymar etielliphaga* Risbec.

Comments: This genus was described under the Mymaridae, tribe Gonatocerini. The drawing of the male (Risbec, 1950, Fig. 88) shows that the insect is completely out of place in this family. It is probably a proctotrupoid.

Genus MYMARIELLA Risbec

Mymariella Risbec, 1951, Mem. Inst. franc. Afr. noire **13:** 402.
Type *Mymariella parlatoreae* Risbec.

Comments: From the description and figures the authors cannot be at all sure that they are dealing with an insect which belongs in the Mymaridae. Until a more complete and critical description comes to hand they must omit the genus from the family.

Genus PARANTHEMUS Girault

Paranthemus Girault, 1915, Mem. Qd. Mus. **3:** 165.
Type *Paranthemus spenceri* Girault.

Comments: From the description it would appear that this monotypic genus, known from a single male specimen, bears no relation to the Mymaridae; the similarity of the wing to *Anthemus* may suggest a relationship with that encyrtid genus.

Genus RICINUSA Risbec

Ricinusa Risbec, 1952. Mem. Inst. franc. Afr. noire **13:** 403.
Type *Ricinusa aleyrodiphaga* Risbec.

Comments: From the original description it is not possible to pronounce on this genus; it may be an extremely aberrant mymarid, or, more probably in the authors' view, it may belong to another family of the Hymenoptera.

SECTION 2.—DESCRIPTION OF NEW SPECIES

This paper is concluded with the descriptions of eight species in various genera, all of which appear to be new. These descriptions, together with the illustrations, will, it is hoped, serve to exemplify and elucidate many of the concepts and opinions expressed in the foregoing section.

Arescon fulvum new species; Fig. 1–5. Table 1.

This species is remarkably similar to the species described and figured under the name *Arescon rufula* (Foerster) by Debauche (1948); especially striking is the head, the construction of which closely resembles that of *rufulum* except in the disposition and number of setae, the extent of the occipital suture, the ridge or carina behind the postfrontal suture, and other small differences. The two species may, however, immediately be distinguished on the venation and setation of the fore wings.

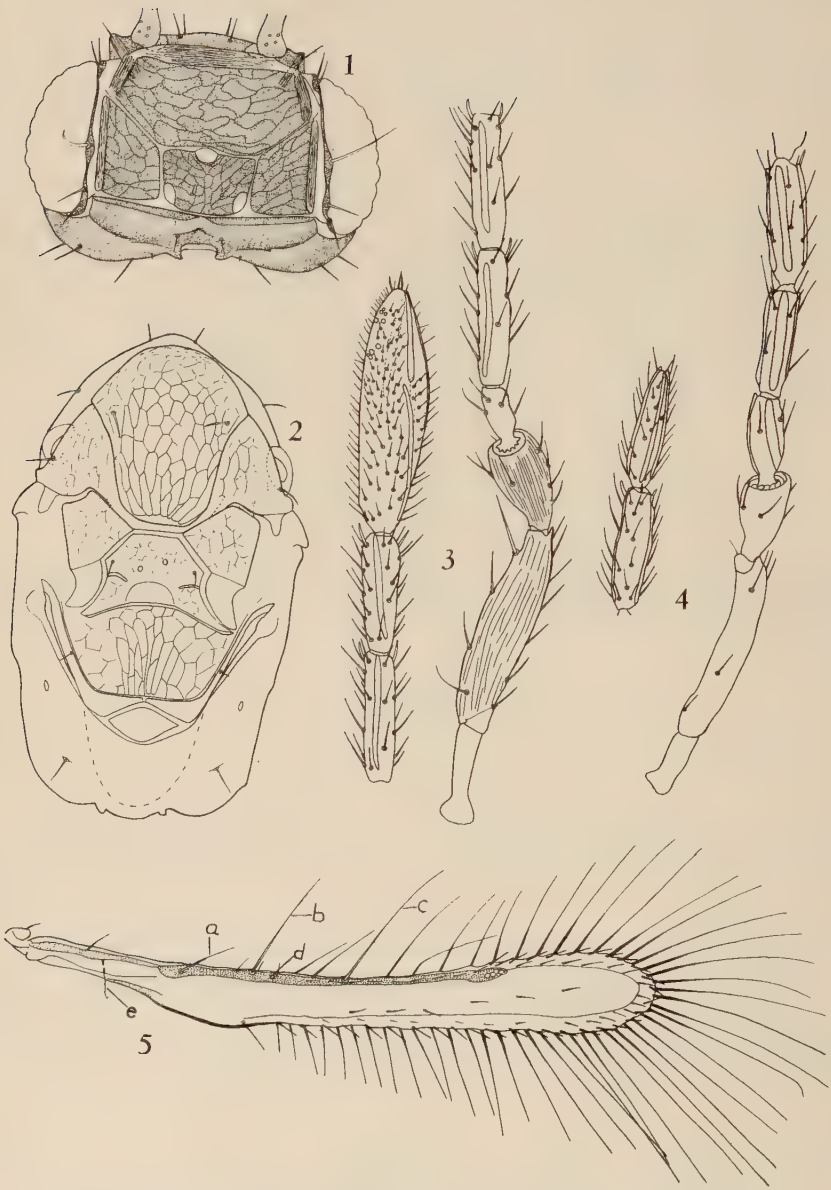

FIG. 1–5.—*Arescon fulvum* new species. 1. Head, dorsal (holotype female); 2. Thorax dorsal (paratype A10–2); 3. Female antenna (paratype A10–1); 4. Male antenna, first five and last two segments (paratype A10–5); 5. Right fore wing (paratype female A10–4); a—proximal macrochaeta; b and c—first and second distal macrochaetae; d—proximal sensillum; e—hypochaeta. Fig. 1–4 del. D. P. Annecke; Fig. 5 del. Miss J. C. F. Boshoff.

Male and female.—General colour light brown, abdomen lighter especially between the sclerites; head a little darker with trabeculae dark brown and ocellar and ocular pigment dark red; antennae dusky with the base of the scape and the extreme tip of the first funicle segment lighter; legs pale brown; fore wings infuscated except for a narrow band beneath the submarginal vein, and a narrow band at the base along the caudal margin; disc beyond the venation nearly clear; hind wing infuscated.

Length of body 638–754 (all measurements in microns).

Female.—Head (Fig. 1) in dorsal view a little more than one and one half times as wide as long; vertex clearly delimited by entire transversofrontal trabecula anteriorly, postfrontal suture (for names of sutures see Debauche, 1948) posteriorly, and divided orbital trabeculae laterally; the latter each divided into two pieces on the vertex, the posterior pieces parallel, longer than the slightly converging anterior pieces; stemmaticum clearly demarcated as a rectangle with the lateral ocelli at the posterolateral angles separated by 28–30, and the anterior ocellus on the transverse anterior suture; the latter suture angled obliquely forward at the anterolateral angles of the stemmaticum, these arms running outward to meet the orbital trabeculae at the point of their division; stemmaticum with two setae between the lateral ocelli; postfrontal suture bordered posteriorly by a medially divided transverse ridge which, with the suture, forms a striking division between the occiput and the vertex; occiput (in posterior view) provided with a rather indistinct coronal suture running from the foramen dorsad to the fronto-occipital ridge; occipital suture interrupted medially, the two lateral arms not reaching the midline, extending only to the level of the innermost pair of small setae which are located on either side of the foramen; in posterior view the genae are provided with 4 and 4 setae; seen from the front the head is slightly wider than its dorsoventral length, the subocular suture about one half, or a little more, as long as the eyes; face bordered by the horizontal transversofrontal trabecula dorsally, by the short terminal pieces of the orbital trabeculae dorsolaterally, and by the parallel frontal carinae laterally; antennae inserted on the dorsolateral angles of the face; face provided with 9 and 9 setae; eye-margin with 4 setae dorsally on either side and one near each antennal insertion; mandibles each with four sharp teeth, the ventral one the strongest; maxillary and labial palpi simple; sculpture of the head (Fig. 1) extremely fine, scarcely visible except under high magnification with a phase-contrast condenser; vertex irregularly reticulate, the reticulations on the stemmaticum rather smaller and, like the two areas on either side of it, rather more regular, than on the anterior part of the vertex; postgenae and face faintly and irregularly striate-reticulate, occasional fairly large cells being formed by striations meeting irregularly. Antennae (Fig. 3) with slender, distinct radicle measuring 49–53 (12); scape slender, 107–129 (16–24); pedicel 53–60 (20–25); funicle I 24–39 (14–16); II 70–94 (14–15); III 69–91 (14–16); IV 65–81 (15–17); V 59–77 (16–19); club 134–146 (32–34); all funicle segments except the first provided with two longitudinal sensoriae extending from near the base to the tip or nearly, and with two small apical setiform sense-cones; club simple, with no trace of segmental division, as long as the two preceding segments together, and not quite twice as wide as the last funicle segment, provided with four longitudinal sensoriae, two basal and two apical, and with many small placoid sensilla grouped irregularly towards the apex ventrally; all antennal segments provided with setae, the scape, pedicel and first funicle sparsely, the succeeding segments more densely; the setae on the club much shorter.

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Thorax in dorsal view (Fig. 2) more than one and one half times as long as wide, measuring 251–290 (150–170), unevenly convex dorsally; prothorax visible dorsally, undivided, with 2 and 2 setae, and with large spiracular openings at posterolateral angles; prosternum not quite closed by the cervicalia, with a single seta on either side of the midline in the middle of the sclerite; mesoscutum about two-thirds as long as total width, with complete parapsidal furrows, which are gently curved in two directions, outward anteriorly and inward posteriorly; parapsides each with a single lateral seta near the rounded outer lateral angles; mesoscutum with 1 and 1 setae near the anterior angles of the parapsides; axillae strongly advanced, without setae; scutellum transversely divided, the anterior part provided with 1 and 1 setae on the external angles near the posteromesal angles of the axillae, their interval nearly twice that of the mesal axillar angles, and with two placoid sensilla at about the level of and between the setae, though often one of the sensilla is advanced beyond the other; this anterior part of the scutellum is shorter than the posterior part, and borders on the latter along a curved transverse line; posterior part of scutellum wider than long; metanotum with a central diamond-shaped area probably produced by internal thickenings of the body-wall, provided with 1 and 1 small setae on the metanotal wings some distance in front of the level of the apex of the scutellum; ventrally the prepectus is completely divided, and the mesopectus is provided with 1 and 1 setae close together near the hind margin; propodeum strongly developed, with the spiracles obliquely behind the metanotal setae, without keels or teeth, with width of petiolar process just less than one-third of that of the apex of the propodeum; 1 and 1 propodeal setae present some distance behind and slightly mesad of the spiracles.

Legs with measurements as in Table 1.

TABLE 1.—Arescon fulvum *new species. Measurements of leg segments in microns*

	Fore	Middle	Hind
Femur	110–166	114–146	106–134
Tibia	118–176	195–247	207–276
Tarsus 1	59– 65	32– 37	34– 41
2	28– 38	34– 37	37– 42
3	28– 37	32– 37	37– 42
4	28– 39	32– 37	35– 41
5	30– 45	36– 45	34– 42

Fore wings (Fig. 5) measuring 574–680 (67–88), only slightly dilated on the caudal margin at the level of the base of the long marginal vein, the narrowest part of the disc less than half its greatest width; venation extending for about three-quarters of the length of the wing, the subcostal vein nearly as long as that portion of the wing beyond the venation; marginal vein about three times as long as subcostal, stigmal a slightly dilated prolongation of it, the four distal placoid sensilla grouped in a tight row at the tip of the stigmal; hypochaeta placed about halfway along the subcostal vein; proximal macrochaeta less strongly developed than the other macrochaetae, situated near the start of the marginal vein; first distal macrochaeta about halfway between the base of the marginal vein and the second distal macrochaeta; the latter, like the first distal, strongly developed, situated about halfway between the proximal macrochaeta and the tip of the stigma; proximal

sensillum located in the middle of the vein at about the first quarter or third of the distance between the two distal macrochaetae; disc of wing with 5–10 setae scattered, sometimes in a rough line, sometimes in two or three broken rows, from the middel of the marginal vein to the tip. Hind wing 510–630 (21), the hamuli reaching 180–220 into the wing; longest marginal cilia on the hind margin, measuring 120–142.

Abdomen, including gonostyli in dorsal view, a little longer and noticeably broader than thorax, measuring 276–336 (170–215); second segment (petiolar segment) very short and transverse; the spiracle-bearing eighth segment the longest, about twice as long as the preceding segment; ninth tergum not visible dorsally, tenth almost replaced dorsally by the large paired cercoids which closely approach one another medially; third tergum with 1 and 1 setae, placed on the dorsum at the anterolateral abdominal angles; fourth to seventh terga each with 3 and 3 setae, consisting of two outer, lateral pairs one of each pair above the other, and an inner pair the positions of which converge caudad from the fourth to the seventh terga forming a V-shaped figure on the dorsum of the abdomen, the apex of which is two adjacent median setae on the eighth tergum; this latter segment with two additional pairs, one of each pair above and below the spiracles; cercoids with 3 and 3 setae, two of which are very long and slender. Ovipositor (284–326) exserted for about one-eighth of its length, about as long as abdomen; gonostyli about two-thirds as long as the shaft of the ovipositor, exserted with the ovipositor, sparsely setose.

Male.—Similar in colour and structure to the female, except with regard to the sex characters; antenna (Fig. 4) measuring: radicle 41–45 (12–14); scape 104–110 (16–24); pedicel 49 (23–28); flagellum I 47–52 (19); II 59–61 (16–20); III 61–67 (17–19); IV 60–65 (15–18); V 63–69 (18); VI 63–67 (18–19); VII 65–67 (20–22); VIII 57–65 (18–23); IX 61–68 (20–22); X 54–63 (20–25); XI 57–65 (14–18); all segments beyond the pedicel sparsely setose, provided with two longitudinal sensoriae; the aedeagus orifice is large, roughly oval but tapering caudally, its greatest length rather more than one-third of that of the abdomen.

Described from 46 female specimens (holotype and paratypes) and 4 male specimens (allotype and paratypes), beautifully mounted in Canada Balsam by Mrs. M. J. Meyer, Division of Entomology, Pretoria; this material collected in suction traps by D. P. Annecke as follows: Rosebank, Cape, South Africa, 3 males and 39 females (allotype and holotype selected from these, remainder paratypes), in February, March and April, 1959; Pretoria, 1 male and 6 females (paratypes), in March, 1957, December, 1958, and January and April, 1959; Lynneast, Transvaal, 1 female (paratype) in March, 1958. These specimens mounted in dorsal, lateral and ventral positions, some after clearing in caustic soda, some uncleared.

Remarks.—The foregoing species is remarkably similar to *Arescon clarkei* Doutt, the type female of which has been examined; the principal differences are to be found in the antennal club of *clarkei* which is shorter than the last two funicle segments together, and in the discal setation of its fore wing which has setae numbering about 30 in one group beneath the venation, and a second cluster towards the tip of the wing.

It will be noticed from the above description that the interpretation of the wing venation (Fig. 5) differs slightly from that of Debauche (1948) in his detailed account of the venation of *Arescon rufulum*; the hypochaeta is recognized as being that seta, arising from the subcostal (= submarginal)

vein in the authors' species, which has a recurved tip and possibly with the function of hooking on to the hind wing in flight; Debauche figures just such a seta on the subcostal vein of *rufulum*, but assigns the name hypochaeta to a seta which apparently lacks the function of the authors' hypochaeta, but which is more conventionally placed on or near the marginal vein. The resemblance in organization of the wing-venation of *rufulum* as figured by Debauche and the authors' species, is indeed striking, as is the similarity of the respective heads. The two species can, of course, be readily separated on the discal setation of the fore wing. The authors' species may be separated easily from *Arescon dallasi* (Ogloblin) n. comb. on the discal setation of the fore wing, the banded abdomen of the latter species and its obliquely and faintly divided antennal club in the female; from *Arescon urichi* (Crawford) n. comb., *fulvum* differs in colour, in discal setation, and in the length of the female's second funicle segment. From Ogloblin's (1957) other species *fulvum* may be distinguished by such characters as wing-shape and setation, and relative proportions of the antennal segments.

Parallelaptera funiculi new species: Fig. 6–11, Table 2.

Female.—General colour brown or dark brown, with the following parts yellowish-brown or lighter: antennae and legs, scutellum, axillae except outer angles, dorsal part of propodeum, basal two or three gastral segments.

Length of body 460–531 (all measurements in microns).

Head (Fig. 6) in dorsal view 138–151 in width, wider than long, slightly wider than the thorax, with eyes large, widely separated, lateral, bare; transversofrontal trabecula entire, providing the head in lateral view with a distinct, rounded, shelf-like protuberance; orbital trabecula extending round the anterodorsal border of the eye from near the antennal insertion to near the posterior ocellus, its length divided into 8 or 9 short pieces; ocelli in a triangle, the lateral pair about their own diameter from an orbit, lateral ocellar interval about 46; ocellar region with transverse lines of sculpture, some of which meet to form wide and narrow reticulations, occipital surface similarly sculptured, but laterally the striations bend down towards the mouth; mandibles apparently greatly reduced or absent.

Antennae (Fig. 11) inserted at about the lower level of the eyes, far apart, close to the eyes; scape not separated from the radicle, the last two-thirds of its length being evenly thickened, measuring 67–69 (12–16); pedicel 32 (14–17); funicle I 10–12 (10); II 13–14 (10–12); III 39–43 (12); IV 18–22 (10–11); V 43–47 (12); club 84–93 (16–17), about as long as the first four funicle segments together; all antennal segments except the first funicle and the club, finely longitudinally striate, especially the first two; funicle segments III and V each with two, and the club with four longitudinal sensoriae, the latter segment also provided with numerous small sense cones.

Thorax (Fig. 7) measuring 227–241 (122–135); pronotum entire, furnished with 3 and 3 dorsal setae, terminating dorsolaterally in the prothoracic spiracles; mesoscutum slightly wider than long, with distinct parapsidal sutures, with a seta on each side mesad of the parapsides and near the anterior angles of the latter; parapsides each with a seta at the posterolateral angles; axillae separated clearly and obliquely from the anterior median part of the scutellum which is landmarked by two adjacent placoid sensilla placed close to the scutoscutellar suture; axillar setae 1 and 1, each reaching the posterior subcircular part of the scutellum; metanotum visible dorsally as a diamond-shaped area separated faintly

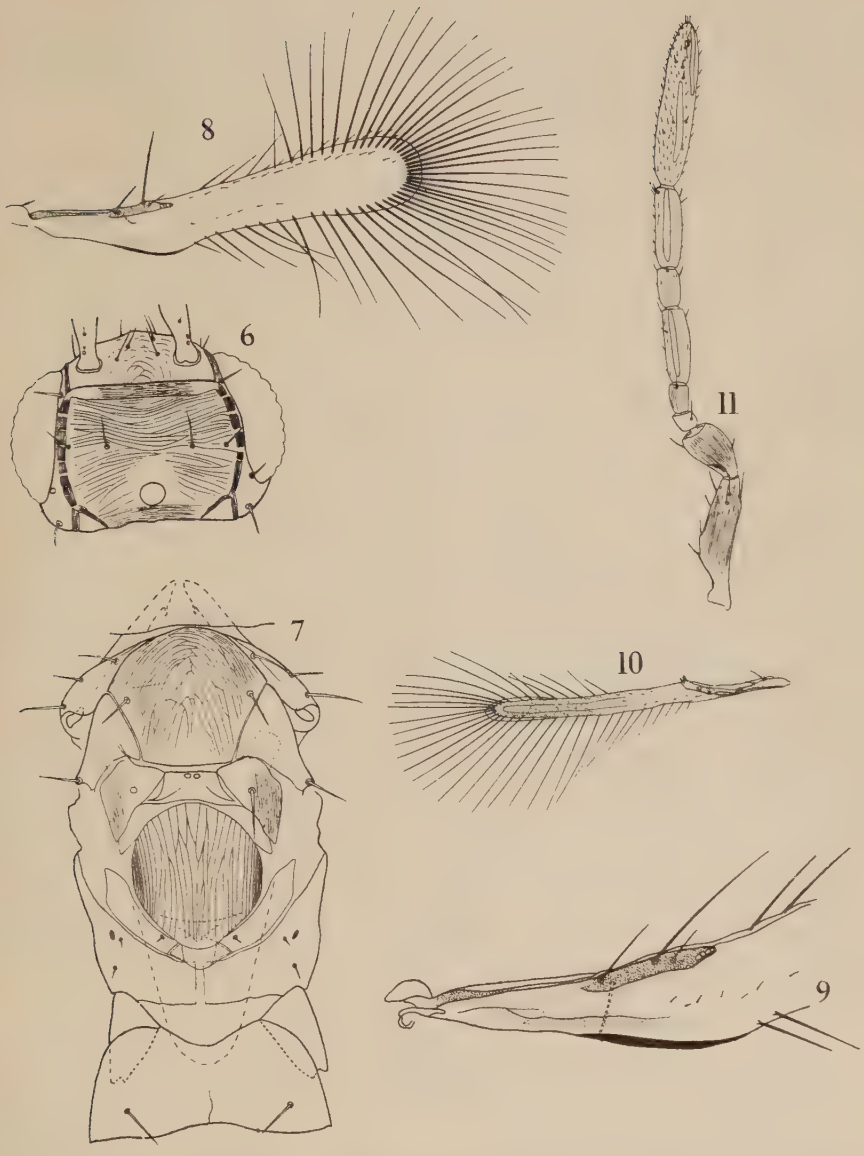

FIG. 6–11.—*Parallelaptera funiculi* new species. 6. Head, nearly dorsal, slightly frontal (holotype female); 7. Thorax and first gastral segment, dorsal (holotype female); 8. Right fore wing (holotype female); 9. Fore wing venation (paratype female A19–5); 10. Left hind wing (paratype female A19–2); 11. Left antenna, outer lateral view (paratype female A19–3). Fig. 6, 7, 8 and 11 del. D. P. Annecke; Fig. 9 and 10 del. Miss. J. C. F. Boshoff.

(possibly subcutaneously) from its lateral wings, with a single small seta on either side of the diamond-shaped area; in lateral view this median part of the metanotum is visible as a distinct projection behind the scutellum; propodeum dorsally with a median division which is difficult to see, extending from the anterior margin which is hidden beneath the projecting part of the metanotum to the posterior margin; hind margin of each half of the propodeum squarely truncate, terminating laterally at the hind coxal cavities; propodeal setae 2 and 2, placed as in Fig. 7; mesophragma projecting slightly into the abdominal cavity as in Fig. 7.

TABLE 2.—Parallelaptera funiculi *new species*. *Measurements of leg segments in microns*

	Fore	Middle	Hind
Femur	85– 93	70– 81	77
Tibia	89–97	118–126	101–114
Tarsus 1	32– 37	31– 44	26– 30
2	26– 28	27– 31	28
3	24– 26	27– 28	22
4	24– 28	23– 24	24

Legs with enlarged fore and hind coxae, middle coxae rounded and less well developed; measurements as in Table 2.

Fore wings (Fig. 8) measuring 337–377 (57–67), in shape typical for the genus, venation reaching 138–149 into the wing, the longest marginal cilia on the hind margin measuring 156–182; with three rows of setae, one on the distal half of the cephalic margin, each seta arising from near the base of a marginal cilium, the second row along the cephalic part of the disc commencing beyond the venation and reaching to near the wing-tip, and a third short row of four to seven small setae near the hind margin of the disc, starting at about the end of the venation; marginal vein (Fig. 9) well developed, the hypochaeta placed close to the proximal macrochaeta but distad of it; distal macrochaeta strong; four distal placoid sensilla arranged in a straight row at the end of the stigma; basal part of the wing with an irregular, pale infuscation not extending beyond the venation. Hind wing (Fig. 10) measuring 334–364 (22), the hamuli 122–130 from the wing-base, longest marginal cilia 132–146; the blade beyond the hamuli entirely infuscated but with clear maculations.

Abdomen about as wide as thorax, measuring 162–223 (105–142); gonostyli projecting slightly distally; ovipositor 150–187 in length, enclosed in a strongly developed hypogynium; cercoids large, each with three long and slender setae.

Described from 9 females (holotype and paratypes collected by D. P. Annecke in a suction trap at Pretoria in March and April, 1958 and 1959. Holotype to be deposited in the Division of Entomology, Pretoria, paratypes in the authors' collections and in those of the USNM and BM.

P. funiculi new species differs from *panis* Enock and *rex* (Girault) in the proportions of the female funicle segments.

Anaphes alaskae new species; Fig. 12–18, Table 3.

Male and female.—Colour dark brown, the legs, antennae and wing venation a little lighter.

Holotype female.—Head (Fig. 12) 313 in width, with eyes anterolaterally placed, ommatidia small, the diameter of each one about half that of an ocellus; lateral ocellar interval 125; transversofrontal trabecula entire, orbital divided dorsally, entire on either side of the face; the latter with 8–9 setae on each side, antennal insertions high and far apart (Fig. 12); mandibles each with three teeth; entire head heavily sculptured with irregular polygonal reticulations. Antenna (Fig. 18) of holotype measuring as follows: scape + radicle 158 (43); pedicel 75 (43); funicle I 37 (25); II 73 (25); III 70 (33); IV 65 (35); V 63 (38); VI 63 (43); club 199 (70); scape faintly reticulate, pedicel faintly longitudinally striate; funicle segments IV and V each with one, VI with two, and club with six longitudinal sensoriae of which two are on the basal and four on the apical one-third of the segment; club with numerous short sense cones ventrally as well as two strong ones near the apex.

Thorax (Fig. 13) measuring 404 (310), with prothorax scarcely visible in dorsal view, prosternum triangular (Fig. 15), longer than wide, practically closed anteriorly, with a median longitudinal groove, with 1 and 1 setae near the basal angles; mesoscutum with entire, strongly diverging parapsidal sutures, with 3 and 3 short setae; parapsides with 1 and 1 setae visible dorsally; scutoscutellar suture transverse, the axillae not advanced, weakly separated from the scutellum by a pale line, each with a single seta; scutellum divided into an anterior sensorial part bearing the paired placoid sensilla, and a posterior, shield-like part, the transverse division between the two being internal, lying beneath the cuticular sculpture but very obvious in cleared specimens; " interscutellum " (see p. 22) very narrow, transverse, only internally separated from the anterior and posterior parts of the scutellum; metanotum a crescent-shaped posteriorly sloping sclerite, bearing 1 and 1 minute setae on the anterior margins slightly in advance of a line connecting the propodeal spiracles, with a distinct subcutaneous median diamond-shaped area; metanotum not covered by the scutellum in dorsal view; propodeum medially with a longitudinal suture, with 1 and 1 slender setae placed as in Fig. 13; entire thorax with strong reticulated sculpture, especially the prothorax and propodeum.

TABLE 3.—Anaphes alaskae *new species, holotype. Measurements of leg segments in microns*

	Fore	Middle	Hind
Femur	216	223	276
Tibia	233	308	383
Tarsus 1	77	81	97
2	47	53	69
3	49	49	57
4	49	47	49

Legs with measurements as in Table 3; coxae, trochanters and femora of all legs with sculpture similar to that of thorax.

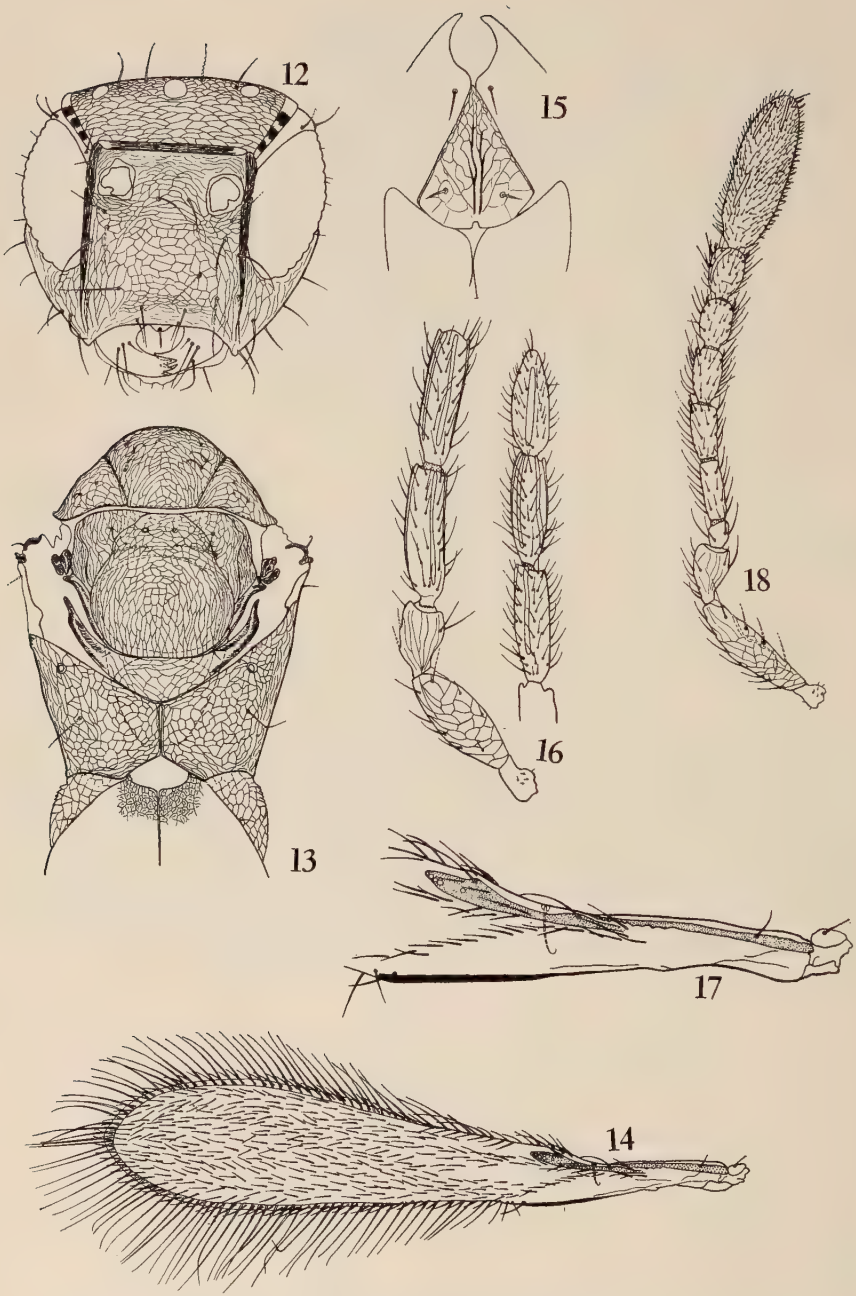

FIG. 12–18.—*Anaphes alaskae* new species. 12. Head, frontal (paratype male A32–3); 13. Thorax and base of gaster, dorsal (allotype male); 14. Left fore wing (paratype male A32–3); 15. Prosternum, dorsal (internal) view (holotype female); 16. Male antenna (allotype); 17. Fore wing venation (paratype male A32–3); 18. Female antenna (holotype). Fig. 12–14, 16–18 del. Mrs. M. J. Meyer; Fig. 15 del. D. P. Annecke.

Fore wings (Fig. 14) measuring 952 (165), venation reaching 337 into the wing, longest marginal cilia 135; discal setation as in Fig. 14, with three distinct hairless streaks basally; venation (Fig. 17) typical for the genus, with the two macrochaetae widely separated, the proximal placoid sensillum placed slightly beyond the level of the distal macrochaeta, and the four distal placoid sensilla in a row at the end of the radial process. Hind wings 904 (47), the hamuli reaching 337 from the base, longest marginal cilia 135; disc with a single irregular row of scattered setae basally, with setae scattered distally, not in rows.

Abdomen measuring 435 (371), fairly broadly attached to the propodeum, the petiole being less than half as wide as the propodeum apically; first gastral segment (Fig. 13) with a variably distinct longitudinal suture on the dorsum; ovipositor 351 in length, shorter than the abdomen, with the basal part enclosed by anterior extensions of the lateral parts of the terga and the ventral gastral segments, as illustrated for *Anaphes calendrae* (Gahan) n. comb. by Gahan (1927, p. 32) though the condition is not as exaggerated as in that species; entire gaster with reticulated sculpture, especially strong basally around the petiolar insertion.

Allotype male.—Similar to the female except in sex characters; antennae (Fig. 16) 12-segmented, without a ring-segment or even a suggestion of one between the pedicel and the first funicle segment, radicle + scape 117 (45); pedicel 68 (43); flagellum I 133 (37); II 125 (35); III 127 (33); IV 120 (33); V 117 (35); VI 110 (35); VII 113 (33); VIII 112 (35); IX 102 (37); X 100 (37).

Described from the female holotype (July 17, 1952), the male allotype (July 26, 1952), and a male paratype (July 12, 1953), collected on the dates given by P. D. Hurd at Pt. Barrow, Alaska, the northernmost point of land in North America. The specimens were unfortunately mounted on the points of pins when R.L.D. received them, and subsequently they have been mounted on slides in Gum Damar, and then remounted in Canada Balsam after clearing in caustic soda. Holotype and allotype in R.L.D.'s collection; paratype in the collection of the USNM.

Anaphes alaskae new species is distinct from all other species known to the authors on such characters as the shape of the wings (Fig. 14), proportions of the female antennal segments, and the extent and nature of the reticulated sculpture on the body and legs.

Ptilomymar rete new species, Fig. 19–24, Table 4.

The generic description appears on p. 24 of this paper.

Holotype female.—Colour brown, the trabeculae, eyes, propodeal and abdominal keels dark brown.

Length of body about 652 (all measurements in microns).

Head (Fig. 22) 166 in width, eyes with large ommatidia, each one nearly the size of an ocellus; anterior ocellus removed from the entire transverso-frontal trabecula by about three times its diameter, lateral pair removed from the entire orbital trabeculae by about twice an ocellar diameter; lateral ocellar interval 61; antennal insertions widely separated, each one at the extreme dorsolateral angles of the face touching both trabeculae; face with 3 and 3 setae, one pair of these between the antennal insertions; head entirely reticulate, reticulations particularly heavy on the ocellar area, faint around the mouth. Antenna (Fig. 19) long and slender, club swollen, particularly

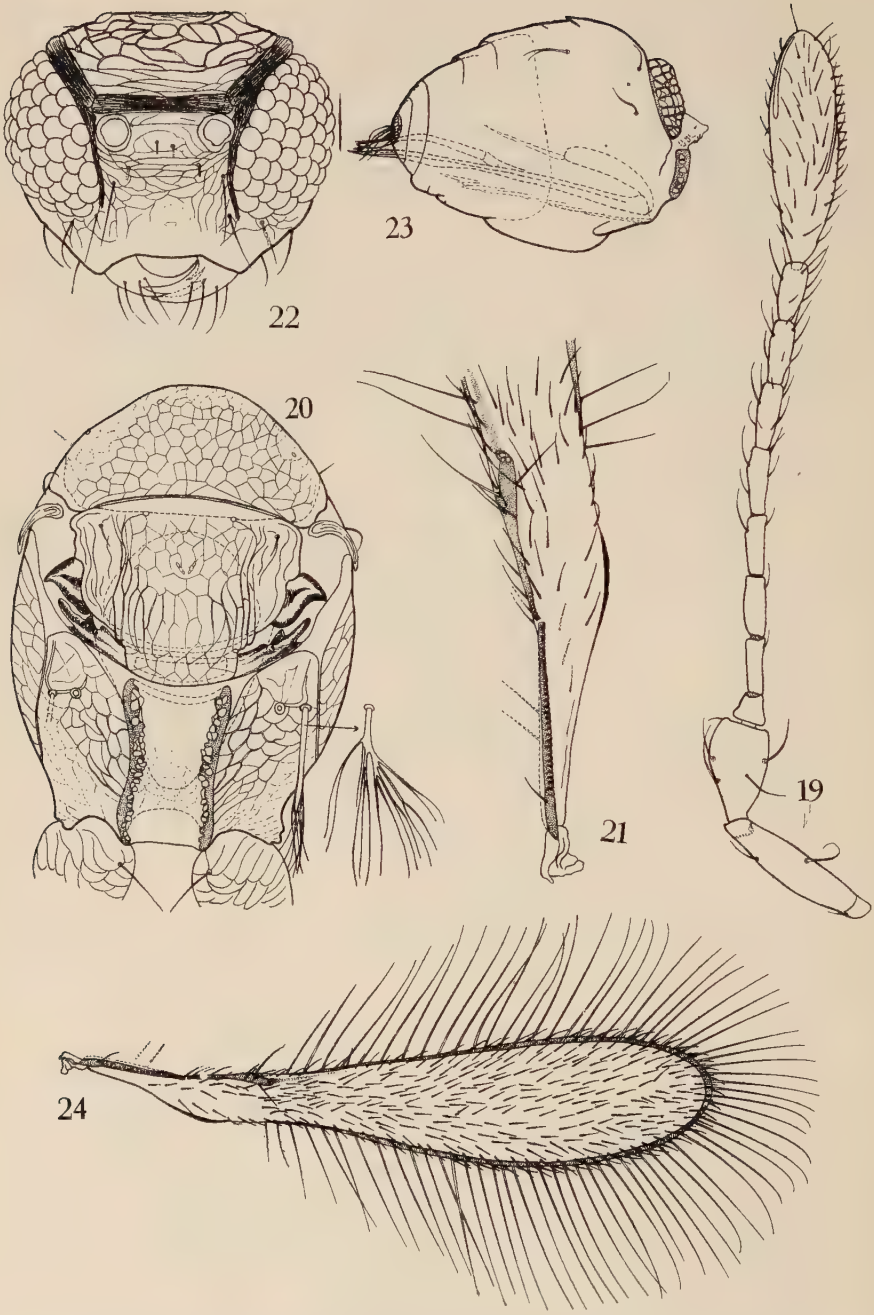

FIG. 19–24.—*Ptilomymar rete* new genus and new species, holotype female. 19. Antenna, lateral; 20. Thorax, dorsal, with propodeal seta, lateral, to show branching; 21. Right fore wing venation (subcostal vein broken during mounting); 22. Head, frontal. 23. Abdomen, lateral (segmentation indistinct); 24. Right fore wing (subcostal vein broken during mounting). Fig. 19–24 del. Mrs. M. J. Meyer.

apically; first funicle segment of remarkable shape (see Fig. 19); scape and radicle confluent, measuring 77 (18); pedicel 52 (29); funicle I 15 (15); II 27 (8); III 30 (10); IV 30 (9); V 34 (9); VI 33 (10); VII 31 (10); VIII 28 (12); club 118 (32); pedicel with fine but distinct longitudinal striations, remainder of antenna similar, but striations less regular and very indistinct; club with four apical and one medial longitudinal sensoriae, and ventrally with a number of slender sense-cones. Thorax (Fig. 20) measuring 227 (170), with prosternum in the shape of a flat triangle, wider than long, closed anteriorly, with an internal medial apodeme arising from a corresponding groove in the sclerite; mesoscutum without parapsidal sutures, with 1 and 1 setae laterally (their bases visible only in a lateral mount); scutellum with axillae indistinctly separated, the latter with 1 and 1 setae; sensilla as described in the generic diagnosis; scutellum with 1 and 1 very faint additional pores or sensilla on the anterior margin (Fig. 20); metanotum covered medially by the apex of the scutellum, only slightly curved crescentically, with 1 and 1 minute setae at the level of the base of the mesophragma, with a transverse, subcutaneous, rectangular area medially; propodeum with paired carinae as described in the generic diagnosis, and with 1 and 1 branched spiracular setae placed as in Fig. 20; thorax almost entirely reticulate, the reticulations heavy on the lateral parts of the propodeum and scutellum, and extending onto the thoracic venter and onto the fore coxae anteriorly; medial part of propodeum (Fig. 20) with very faint reticulations.

Legs with all femora and fore tibia swollen distally; measurements as in Table 4.

TABLE 4.—Ptilomymar rete *new genus and new species, holotype. Measurements of leg segments in microns*

	Fore	Middle	Hind
Femur	146	132	148
Tibia	150	187	219
Tarsus 1	45	37	45
2	22	32	41
3	24	32	41
4	41	53	61

Fore wings (Fig. 24) measuring 822 (161), venation (excluding Rs) reaching about 280 into the wing, the longest marginal cilia 116; marginal vein (Fig. 21) short; stigmal and radial process well developed, the latter bearing four placoid sensilla in an apical cluster; proximal macrochaeta and placoid sensillum lacking; Rs distinct, extending along the cephalic margin, its length about one half that of the subcostal; entire margin beyond the venation, cephalically and caudally, strongly thickened and dark brown in colour; disc with densely scattered setae, entirely but slightly infuscated. Hind wing extremely narrow, measuring 340 (8), the hamuli 181 from the wing-base, the longest marginal cilia 97; disc slightly infuscated.

Gaster (Fig. 23) about 325 in length, with petiole clearly defined, narrow, not much longer than wide; with keels as described in the generic diagnosis and illustrated in Fig. 23; ovipositor 294 in length, lying along the venter of the gaster, slightly curved distally, the gonostyli more strongly curved.

Described from a single female specimen, the holotype, bearing the following data: " 12 mi. S.W. Padillo, Taum. Prov. Mexico, Rio Corona; Jan. 8, 1950; S. Mulaik, coll."; holotype in R.L.D.'s collection.

Tanaomymar mirum new species, Fig. 25–29. Table 5.

The generic description appears on p. 25 of this paper.

Holotype female.—Colour predominantly brown, with antennae yellowish brown except funicle segments I–III basally, and club segments which are dark brown; trabeculae dark brown.

Length of body 3·69 millimetres (remainder of measurements in microns).

Head, in dorsal view, 375 in width, with eyes bordered by entire orbital trabeculae, ommatidia small, each less than one-third of the diameter of an ocellus; ocelli in an acute-angled triangle, the anterior one removed from the entire transversofrontal trabecula by one and one half times its greatest diameter, the lateral pair about the same distance from the orbits, their interval 59; occipital sutures entire on each side, reaching the foramen which is placed in a rather deep, strongly rounded emargination of the occiput; ocellar area with 7 and 9 very slender setae, 3 and 3 of which are in a transverse arc behind the transversofrontal trabecula; antennal insertions separated by a distinct truncate protuberance; in ventral view, the face between the antennal insertion and the mouth with about 32 and 32 slender setae, with a hairless area medially; mouth-cavity smaller than an orbit, placed rather far back, much closer to the foramen than to the antennae; mandibles bidentate, the teeth blunt; entire head without sculpture. Antennae (Fig. 25) with radicle separated indistinctly from scape, about as long as wide; scape short, medially thickened, measuring 134 (59); pedicel 97 (45); funicle I 300 (32); II 413 (35); III 758 (47); IV 255 (77); club I 241 (163); II 276 (194); III 404 (191); funicle segments I–III slender, parallel-sided, IV becoming thicker apically, all without longitudinal sensoriae, and setae increasing in number and size from the first to the last funicle segment; club segments densely setose, the first with 4, the second with 7, and the third with 27 short longitudinal sensoriae (Fig. 26 shows only those visible on upper surface); each sensoria about 55 in length; antenna without sculpture except the scape which is furnished with distinct, irregular cross-ridges ventrally and with faint longitudinal ridges or striae on the dorsal and internal surfaces.

Thorax (Fig. 26), in dorsal view, measuring 1,523 (298); prothorax elongate, 449 in median length, undivided dorsally, with 7 and 7 fine setae in a row on each side, the caudal pair long and very slender, with spiracles sessile at the posterolateral angles, with prosternum elongate, closed anteriorly (shown in interrupted lines in Fig. 26); mesoscutum elongate, 574 in length medially, with semicircular cephalic margin, with parapsidal sutures extending for nearly the entire length of the sclerite but not quite reaching the caudal margin; parapsides each with a fine seta placed near the level of the tips of the elongate internal axillar projections; axillae not advanced, sloping strongly laterally on each side of the scutellum; the latter 234 in length, with 2 and 2 setae, the anterior (axillar) pair long and slender, and a minute second pair placed caudad of the axillar setae; metanotum strongly crescent-shaped, almost semicircular, covered by the scutellum medially, with 1 and 1 fine setae cephalad of the propodeal spiracles; propodeum 298 in length medially, with the spiracles adjacent to the anterior margin, with petiole arising from

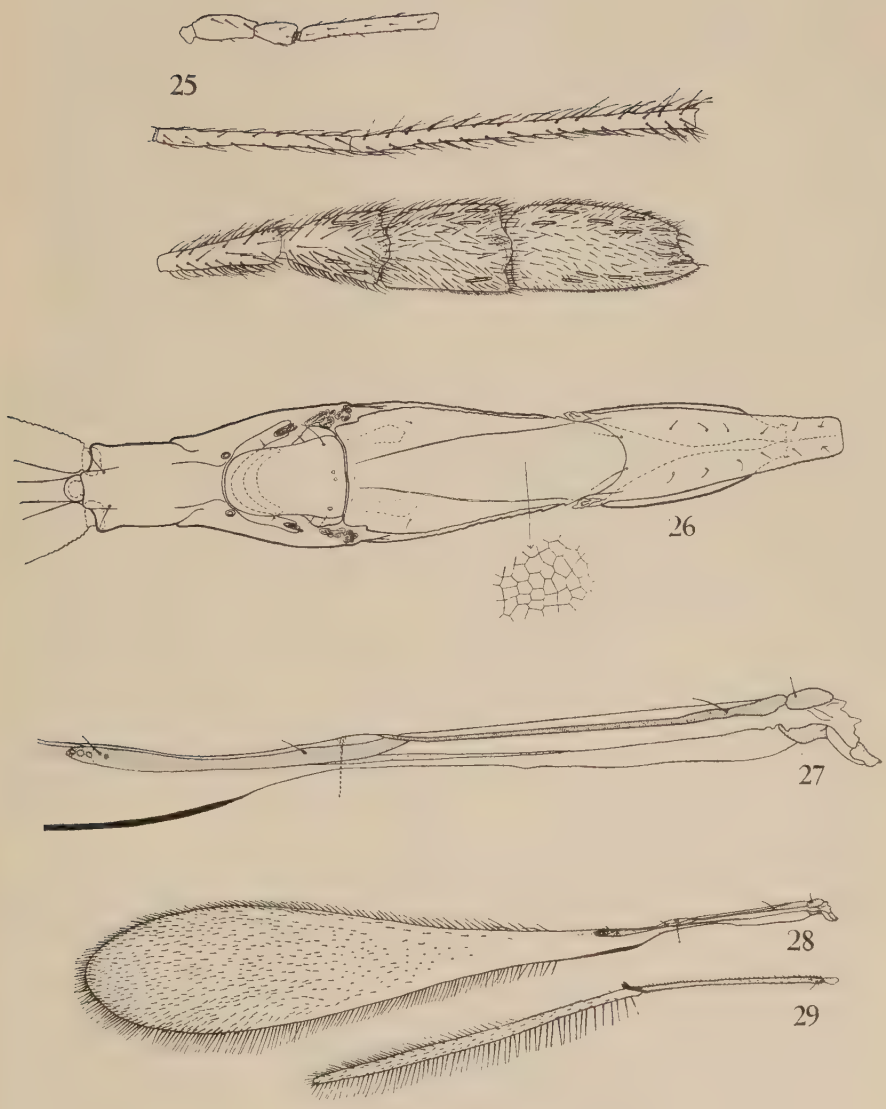

FIG. 25–29.—*Tanaomymar mirum* new genus and new species, holotype female. 25. Right antenna; 26. Thorax, dorsal, with mesoscutal sculpture at right; 27. Left fore wing venation; 28. Left fore wing; 29. Left hind wing. Fig. 25–29 del. Mrs. M. J. Meyer.

a subcylindrical posterior prolongation with which is fused similar ventrolateral prolongations on each side, each of which gives rise caudally to a hind coxa; propodeal spiracles placed on either side of, and slightly cephalad from, the petiolar insertion; thorax with fairly strong reticulated sculpture (Fig. 25, inset) on anterior half of the pronotum, the mesoscutum, parapsides and posterior prolongation of the propodeum; posterior half of pronotum, scutellum, and remainder of propodeum smooth, or sculpture extremely weak.

TABLE 5.—Tanaomymar mirum *new genus and new species, holotype. Measurements of leg segments in microns*

	Fore	Middle	Hind
Coxa	257	283	677
Femur	652	508	923
Tibia	682	877	1,046
Tarsus 1	368	448	745
2	167	184	184
3	99	99	113
4	100	106	124

Legs with fore femora curved, fore tibia with a number of stout short spines; hind coxae prodigiously developed with very strong sculpture as on the mesoscutum, longer than fore and middle femora; first tarsal segments of all legs longer than the remaining tarsal segments together, those of the hind legs longer than the fore and middle femora; measurements as in Table 5.

Fore wings (Fig. 28) normal for the family, long and slender, measuring 2,540 (425), the venation reaching 789 into the wing, marginal cilia short, the longest being about 99; venation (Fig. 27) with the macrochaetae widely separated, the proximal one just beyond the hypochaeta and the distal one near the first of the four distal placoid sensilla and just beyond the proximal placoid sensillum; marginal vein strongly embrowned, the subcostal lighter; postmarginal distinct though very thin; Rs present at the tip of the radial process, but short, poorly developed; discal setation commencing only at about the middle of the wing's length, the setae becoming more abundant distally, basal setae often very short with rather large bases. Hind wing (Fig. 29) long and slender, measuring 1,866 (43), the hamuli 754 from the base; disc with sparse, scattered setae.

Abdomen with gaster in dorsal view measuring 1,016 (400), with petiole long and slender, measuring 739 (53), the latter smooth, parallel-sided; ovipositor 831 in length, the gonostyli about one half as long, slightly exserted posteriorly; gaster without sculpture.

Described from a single female specimen (the holotype) bearing the data "Trinidad, B.W.I. (Hoboken POE), Mar. 25, 1955. On orchid". The specimen was very kindly lent to D.P.A. for study by the authorities of the USNM, and it has now been removed from its original card-point, cleared in caustic soda after removal of the wings, and mounted in Canada Balsam, wings on the same slide under a second coverslip.

Chaetomymar lepidum new species; Fig. 30–36, Table 6.

Female.—Colour of body yellow, with antennal club, last segment of all tarsi and trabeculae dark brown; eyes very dark red or black; tips of hind

femora, bases of second and third funicle segments, and tips of gonostyli dusky to brown; petiole and remainder of legs and antennae pale yellowish.

Length of body 703–741 (all measurements in microns).

Head (Fig. 30) with strong and entire transversofrontal and orbital trabeculae, ocelli in an obtuse-angled triangle, the anterior one as far from the transversofrontal trabecula as the lateral pair are from the orbital, ocellar diameter 20, lateral ocellar interval 65–67; ocellar area with usually 12 and 12 setae, and with two small pori close to the lateral ocelli; occipital suture not reaching the foramen; antennal insertions adjacent to the orbital trabeculae, removed from the transversofrontal trabecula by about the diameter of an ocellus; head without sculpture. Antennae (Fig. 35) with scape curving outward, radicle not separated, 90–92 (17–18); pedicel 50–57 (23–25); funicle I 50–55 (10–12); II 100–108 (12); III 92–98 (10–12); IV 58–65 (12); V 42–43 (13); VI 38 (18); club 137–154 (30–38); the latter with three apical, one subapical and one median longitudinal sensoriae.

Thorax, dorsally (Fig 31), having prothorax medially divided, with usually 10 and 10 strong blunt spines 2 and 2 of which are prodigiously developed, with transverse rugae anteriorly on either side of the median suture, and with normal, sessile spiracles at the posterolateral angles; mesoscutum with strong parapsidal sutures which terminate anteriorly in strong foveae, the parapsides each with a strong lateral seta; scutellum with clearly delimited axillae each bearing a very strong spine, blunt-tipped like the other thoracic spines, scutellar sensilla placed on the caudal third of the sclerite, well separated; metanotum a sloping crescent-shaped band bearing 1 and 1 minute setae at about the level of the propodeal spiracles; propodeum without keels, with 2 and 2 setae placed as in Fig. 31; thorax entirely smooth, without sculpture; in ventral view, the prosternum (Fig. 33) with a median carina on the caudal two-thirds, with 4 and 4 small setae in two posteriorly diverging rows.

Legs with femora slightly swollen basally, measurements as in Table 6

TABLE 6.—Chaetomymar lepidum *new species*. *Measurements of leg segments in microns*

	Fore	Middle	Hind
Femur	152–172	185	175–216
Tibia	189–199	273–286	276–303
Tarsus 1	88– 91	105	91–108
2	51	54	54– 57
3	40– 44	44– 51	44– 47
4	37– 40	37– 40	40

Fore wings (Fig. 32 and 34) as described above, 775–789 (138–142), the venation reaching 185 into the wing; longest marginal cilia 175–185; venation as described on p. 34. Hind wings 578–585 (20), the hamuli reaching 196 into the wing; longest marginal cilia 121.

Gaster 229–273 (192–219), the petiole about 120 (24–25), in lateral view biconstricted, swollen beyond the middle to about twice its basal thickness; first gastral segment ascending steeply from the ventrally situated petiolar insertion; ovipositor 212–223, the gonostyli less than half as long, slightly exserted.

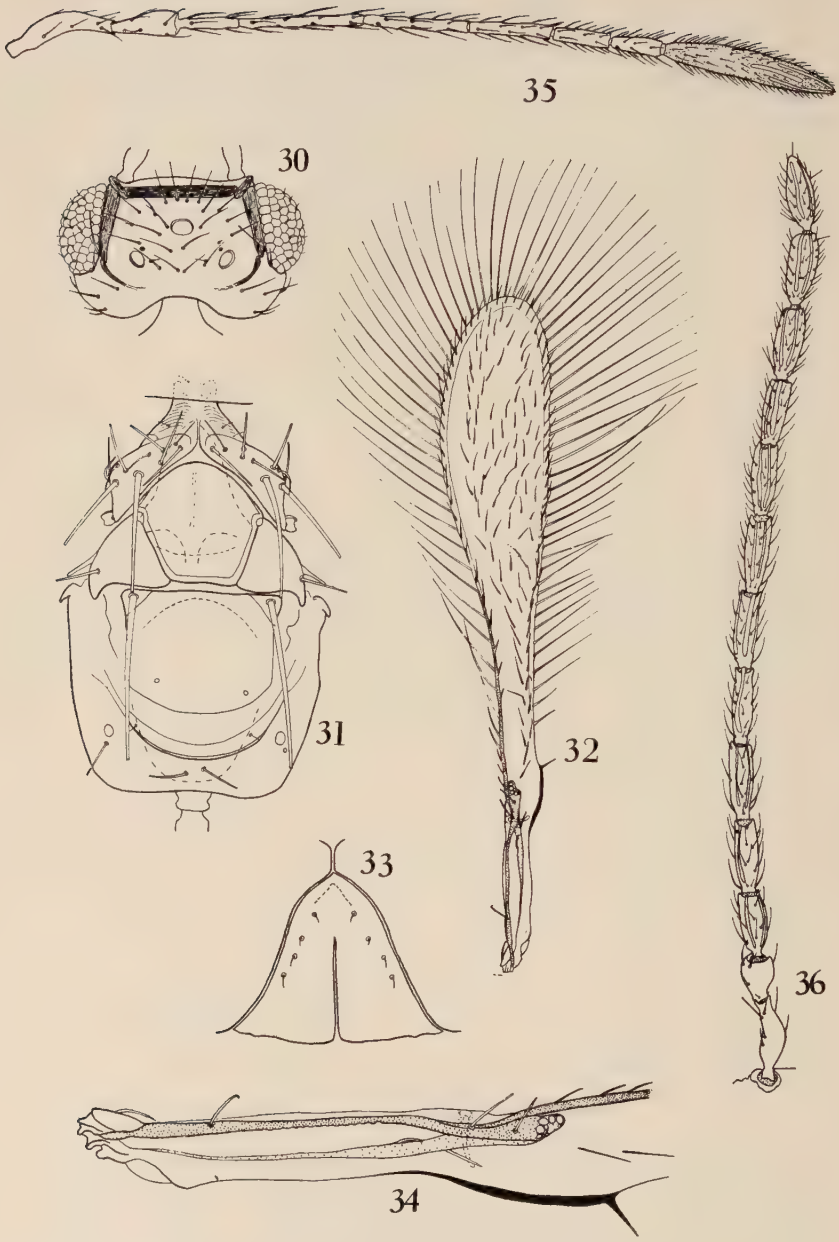

FIG. 30–36.—*Chaetomymar lepidum* new species. 30. Head, dorsal (paratype female A4–8); 31. Thorax, dorsal (paratype female A4–4); 32. Right fore wing (holotype female); 33. Prosternum, ventral (paratype female A4–7); 34. Fore wing venation (holotype female); 35. Right antenna (holotype female); 36. Left antenna (allotype male). Fig. 30, 32–34, 36 del. Mrs. M. J. Meyer; Fig. 31 and 35 del. D. P. Annecke.

Male.—Colour brownish-yellow with the pedicel, base of scape, legs except tips of hind femora and tarsi, and petiole, pale yellowish, trabeculae and eyes as in the female; flagellum of antenna dark brown. Agreeing in structure with the female except for sex characters; antennae with scape 73–75 (20–28); pedicel 42–43 (25–27); flagellum I 60–72 (23–27); II 68–72 (23); III 72–77 (20); IV 72 (20–22); V 68–73 (20–22); VI 72–75 (20–25); VII 65–72 (22–27); VIII 67–68 (23–28); IX 68–72 (24–28); X 65–67 (25–28); XI 70–73 (22–25).

Described from 21 females (holotype and paratypes) and 13 males (allotype and paratypes) collected at Pretoria, South Africa, in March and April, 1957, and in January, February, March, April and December, 1958; from 3 females (paratypes) and 1 male (paratype) collected at Lynneast, Transvaal, in February and April, 1958; also from 1 female (paratype) and 4 males (paratypes) collected at Louis Trichardt, Transvaal, in April and May, 1959; all specimens collected by D. P. Annecke and mounted in balsam, some after clearing in caustic soda. Holotype, allotype and paratypes in the collection of the Division of Entomology, Pretoria; paratypes to be deposited in the collections of R.L.D., Dr. A. A. Ogloblin, the USNM and the BM.

An additional series of female specimens (6 from Glen, Orange Free State, 1 from Louis Trichardt, 1 from Pretoria and 1 from Rosebank, Cape) presents certain difficulties since they differ from the typical series in some slight features, namely, the propodeum is provided with three pairs of setae, the scutellar sensilla tend to be closer together though their interval is variable, the thoracic chaetotaxy appears to be less strongly developed. These differences may simply be intraspecific variations, and it is not possible at this time to say whether one variable species is being dealt with or whether two or more distinct species are involved. These specimens are not included in the type series of *C. lepidum*.

Remarks.—The foregoing description of *C. lepidum* n. sp. provides a remarkable extension of the range of the genus from East Siberia, the origin of the generotypical *kusnezovi* Ogloblin, to include South Africa. The South African species seems to be very similar to *kusnezovi* but may be distinguished by the relatively shorter first funicle segment, the more slender club, and the more widely spaced prosternal setae.

Barypolynema medicae new species; Fig. 37–41. Table 7.

Colour.—Body dark brown, eyes red, petiole and legs yellowish, the femora basally, and tibiae dusky, the last tarsal segments brown; female scape and pedicel dusky dorsally, the basal funicle segments dusky becoming darker apically, the club brown; male antenna beyond the scape brown.

Female.—Length of body 700–768 (all measurements in microns).

Head, 182–189 in width, with small eyes placed anterolaterally, and with small widely separated ocelli, each one about the size of an ommatidium, lacking periocellar grooves; the lateral pair placed near the rounded angles formed on each side by the occipital suture and the orbital trabecula, each one removed from the former by about the diameter of an ocellus and each one placed behind and slightly mesad of a small pore; lateral ocellar interval 84–85; anterior ocellus removed from the entire transversofrontal trabecula by about three times its own diameter; ocellar area with weak reticulated sculpture, with about 9 and 9 setae; occipital suture reaching the dorsolateral angles of the foramen; mandibles tridentate, the upper tooth the smallest.

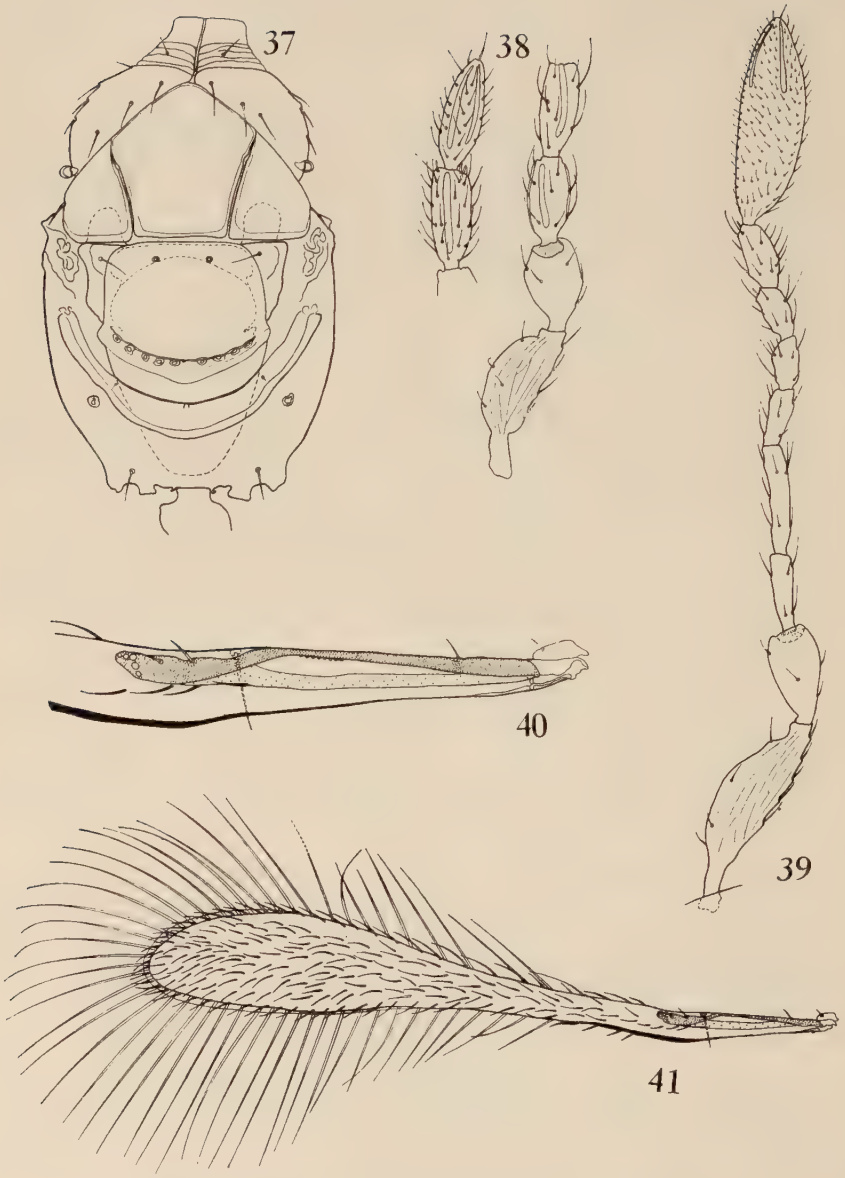

FIG. 37–41.—*Barypolynema medicae* new species. 37. Thorax, dorsal (paratype female A31–1); 38. Male antenna, first four and last two segments (paratype A31–4); 39. Right antenna of female, internal lateral view (paratype A31–3); 40. Fore wing venation holotype female); 41. Left fore wing (holotype female). Fig. 37–41 del. Mrs. M. J. Meyer.

Antenna (Fig. 39) inserted high on the head, their insertions near the orbital margins, with well defined radicle measuring 24 (10); scape roundly expanded beneath, 83–85 (30–32); pedicel 53–58 (27–28); funicle I 40–45 (12); II 57–60 (12–15); III 33 (12–15); IV 27–30 (12–15); V 28–30 (13–17); VI 38–40 (17–18); club 122–128 (33–47); club with four apical and one median longitudinal sensoriae; antenna without sculpture except scape which has several poorly defined and irregular longitudinal striations.

Thorax, dorsally (Fig. 37) 270 (152–169), with prothorax medially divided by a longitudinal suture, the suture giving rise anteriorly to several transverse rugae, with about 8 and 8 setae, 3 and 3 of which are in an arc along the mesoscutal margin, and with normal, sessile spiracles at the posterolateral angles; mesoscutum with strong, gently curved parapsidal sutures, each with a fovea anteriorly; parapsides each with a single seta placed externally, usually visible only in lateral mounts; mesoscutal sculpture weak, the reticulations orientated longitudinally on the posterior half and transversely on the anterior half; scutellum with axillae well separated, each with a single seta; scutellum smooth, about as wide as long, with a curved transverse row of foveae posteriorly, with the sensilla strongly advanced to near the anterior margin, their interval usually less than the posterior parapsidal interval; metanotum a crescent-shaped, posteriorly sloping sclerite, with 1 and 1 minute setae slightly in advance of a line between the propodeal spiracles; propodeum without keels, with 1 and 1 setae placed above the hind coxal insertions, without teeth in the angle between the coxal and petiolar insertion.

Legs with femora strongly swollen basally, especially the fore femora, with measurements as in Table 7.

TABLE 7.—Barypolynema medicae *new species. Measurements of leg segments in microns*

	Fore	Middle	Hind
Femur	155	155–158	169
Tibia	138–145	214–216	246–253
Tarsus 1	68– 71	67	94–108
2	37– 40	48– 51	50– 54
3	34– 38	42– 47	37– 42
4	37– 42	35– 44	40– 43

Fore wings (Fig. 41) long and narrow, hyaline, evenly setose, measuring 786–799 (118–121), the venation (Fig. 40) reaching 175–185 into the wing; longest marginal cilia on the hind margin distally, measuring 199–202. Hind wings hyaline, measuring 537–576 (15), the hamuli reaching 185 into the wing; longest marginal cilia 108–115.

Gaster 276–316 (169–216), with petiole about as long as the scape, and with ovipositor 280–296, gonostyli slightly exserted.

Male.—Similar to the female in colour, structure and proportions, except the sex characters; antenna (Fig. 38) with scape 92–98 (20–25); pedicel 43–50 (28–32); flagellum I 48–58 (22–25); II 53–62 (18–22); III 57–65 (20–22); IV 52–58 (19–22); V 53–60 (18–22); VI 50–57 (18–20); VII 55–60 (20–22); VIII 57–58 (18–20); IX 62–63 (18–23); X 62–67 (20–25); XI 66–67 (21–22); each flagellar segment with four longitudinal sensoriae commencing near the base and reaching the apex

Described from 7 females (holotype and paratypes) and 6 males (allotype and paratypes) collected by vacuum cleaner in an alfalfa field at San Jacinto, California, on VIII.1.1958 by E. I. Schlinger. These specimens were remounted from a Gum Damar mount, to Canada Balsam; some of both sexes were first cleared in caustic soda. Holotype, allotype, and paratypes in R.L.D.'s collection; paratypes to be deposited in D.P.A.'s collection and in USNM collection. Abundant material of this species exists in the collection of the collector, Citrus Experiment Station, Riverside, and in that of R.L.D.

Remarks: In accordance with the authors' interpretation of *Barypolynema* and *Polynema*, *B. medicae* n. sp. has been placed in the former genus rather than in *Polynema* in view of the absence of keels on the propodeum. In this connection it may be pointed out that certain North American species presently classified as species of *Polynema* were examined by D.P.A. in the USNM collection and were found to show no traces of propodeal keels: *zetes* Girault (one female, det. Gahan) and *longipes* (Ashmead) (several females, det. Girault and Gahan) are among these species. It is clear that the North American species of *Polynema* need further study, preferably in conjunction with species from other regions, and until this has been done the authors cannot be completely sure about the value of *Barypolynema* as a generic category.

B. medicae n. sp. may be distinguished from all other species of *Barypolynema* and *Polynema* examined by the authors and known to them from the literature by a combination of characters, namely, the row of foveae on the scutellum, the long and narrow fore wings, the absence of propodeal keels, the position of the scutellar sensilla, and the scape devoid of cross-ridges.

In the USNM collection is a very interesting specimen on a slide bearing the following data in L. O. Howard's handwriting: " E. A. Schwarz, Anaphes gracilis, D.C. 13.8.'96." Gahan determined this specimen as " Polynema ". It is in fact identical with the females of *B. medicae* n. sp. described above, so far as can be determined, and it is therefore assumed that the range of *medicae* is in all probability not restricted in North America to California. The authors are grateful to Dr. Burks for the loan of this specimen for study.

Polynema brevicarinae new species; Fig. 42–47, Table 8.

As discussed on p. 36 this species possesses certain characters claimed by Soyka (1956) to be characteristic of several genera near *Polynema*; the following description of the species is given in order that the authors' interpretation of the genus *Polynema* may be exemplified and clearly understood.

Female.—Colour dark brown to black, except the petiole and all appendages which are lighter; first three segments of antenna light brown like the petiole, remainder progressively darker, club nearly as dark as body; all legs light brown with a dark median and ventral area on each femur and last tarsal segments brown.

Length of body 982–1,278 (all measurements in microns).

Head 216–276 in width, with ocelli in an obtuse-angled triangle, each one about 10 in greatest diameter, the anterior one removed from the entire transversofrontal trabecula by about three times an ocellar diameter, the lateral pair removed from the entire orbital trabeculae by about one and one half times their own diameter, their interval 71–88; each lateral ocellus with

a small pore near its anterior margin; ocellar area finely cellulate, with about 7 and 7 setae, bordered posteriorly by the oblique occipital sutures which do not reach the foramen; antennal insertions at about the level of the lower third of the eyes, widely separated, touching the orbital trabeculae laterally; mandibles tridentate. Antennae (Fig. 46) with scape (Fig. 45) lightly and irregularly longitudinally striate on the outer surface, strongly cross-ridged on the inner, measuring 84–118 (20–33), with radicle indistinctly separated; pedicel very lightly longitudinally striate, 51–67 (24–37); funicle I 47–67 (10–17); II 71–108 (15–17); III 57–81 (14–17); IV 44–57 (14–17); V 44–61 (15–20); VI 64–74 (20–27); club 142–162 (34–40); last funicle segment with a single and the club with five apical and two median longitudinal sensoriae.

Thorax, dorsally (Fig. 42), measuring 337–462 (185–231), with prothorax divided by a strong median longitudinal suture, anteriorly transversely rugose on either side of the suture, equipped with about 9 and 9 setae, 4 and 4 of which are in an arc near the mesoscutal margin; prothoracic spiracles normal, sessile at posterolateral angles; ventrally, prosternum not closed anteriorly, with a median carina on the caudal half, and with 2 and 2 small setae at about the middle of the sclerite, close to the lateral margins; mesoscutum finely cellulate, with strong parapsidal sutures, the latter with strong foveae anteriorly, without setae but with 1 and 1 small (?) pori mesad of the parapsidal foveae; scutellum with sensilla separated by about as much as the caudal parapsidal interval, with a transverse curved row of foveae posteriorly, the sclerite about as wide as long, or very slightly longer than wide; axillae clearly separated from the scutellum, not advanced, each with a single seta; posterior margin of scutellum very difficult to distinguish from internal ridges and from anterior margin of metanotum which is crescent-shaped and steeply sloping posteriorly, with 1 and 1 minute setae mesad and cephalad of the propodeal spiracles; propodeum with a short median carina commencing above the petiolar insertion and extending up the posterior propodeal slope for about one quarter to one third of its length; with 1 and 1 setae placed laterally just above the coxal insertions, very difficult to see in dorsally mounted specimens but readily seen in lateral mounts.

TABLE 8.—Polynema brevicarinae *new species. Measurements of leg segments in microns*

	Fore	Middle	Hind
Femur	175–249	169–236	169–236
Tibia	142–253	253–344	273–418
Tarsus 1	81–121	115–155	142–212
2	44– 64	64– 88	67–101
3	40– 51	51– 67	51– 67
4	44– 61	51– 60	54– 64

Legs without sculpture except the femora which are indistinctly and irregularly longitudinally striate in cleared specimens; fore tibia with about 6 or 8 stout setae on the internal surface; measurements as in Table 8.

Fore wings (Fig. 47) 918–1,333 (229–279), the longest marginal cilia 169–202, the blade rather broad, scarcely narrowed beyond the level of the venation; venation reaching 236–320 into the wing. details as in Fig. 44; the blade without infuscations, uniformly setose, the setae moderately strong.

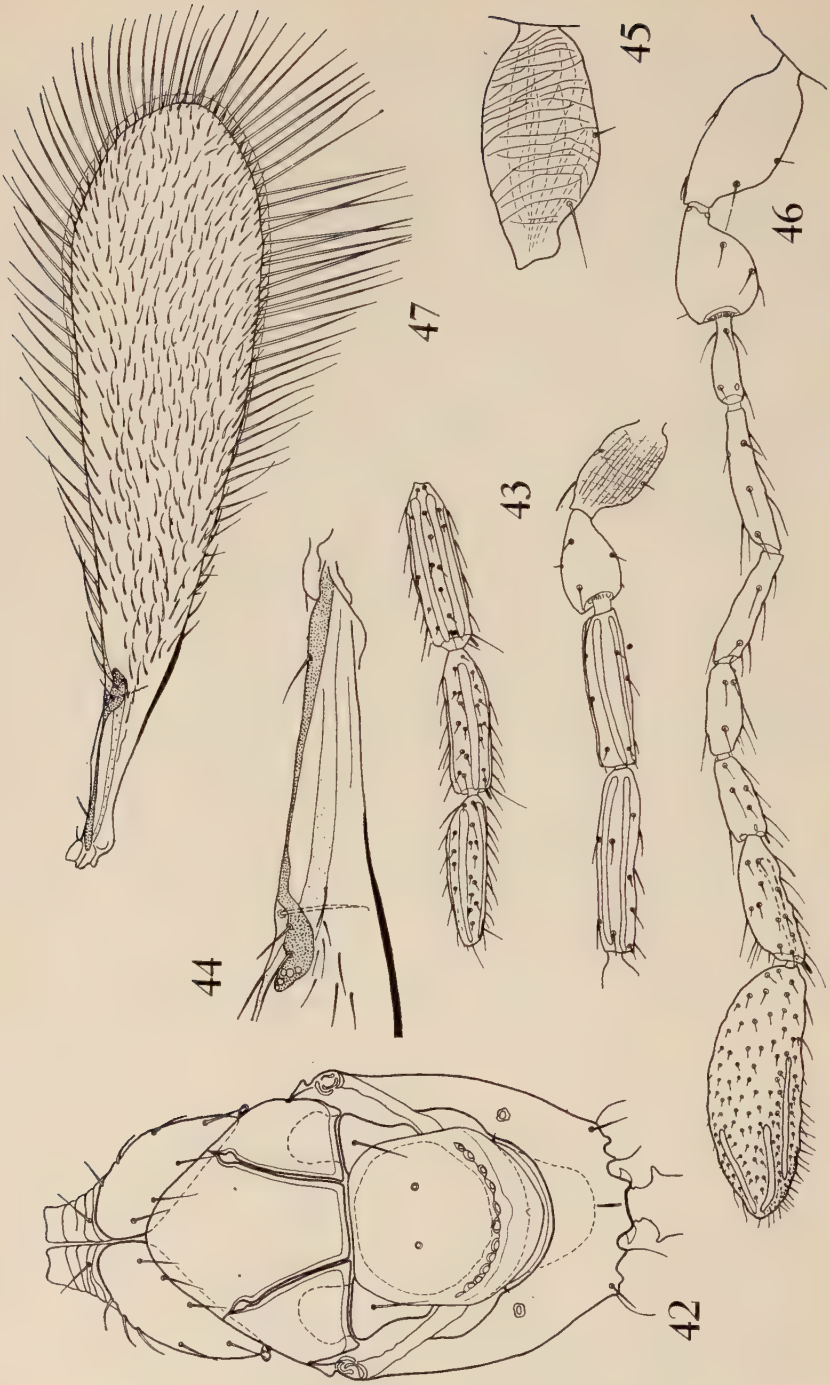

FIG. 42–47.—*Polynema brevicarinae* new species. 42. Thorax, dorsal (allotype male); 43. Male antenna, first four and last three segments, external lateral view (paratype A30–5); 44. Fore wing venation (paratype female A30–1); 45. Antennal scape of right antenna of female, internal lateral view showing cross-ridges, longitudinal striae on external surface stippled (paratype A30–2); 46. Right antenna of female, internal lateral view, sculpture omitted (paratype A30–2); 47. Right fore wing (paratype female A30–1). Fig. 42, 45 and 47 del. Mrs. M. J. Meyer; Fig. 43, 44 and 46 del. Miss J. C. F. Boshoff.

Hind wing 734–1,088 (24–27), the hamuli reaching 236–320 into the wing, the longest marginal cilia 118–138.

Gaster measuring 458–559 (263–286), the petiole 125–131 (47); in dorsal view, gastral segments I–IV with transverse hind margins, that of V sinuate with a slight emargination on either side; spiracle-bearing sixth (= morphological eighth) with a transverse row of 3 and 3 setae; cercal plates with 4 and 4 strong setae, the longest not reaching the tips of the gonostyli; ovipositor 475–570, slightly exserted, the gonostyli long and narrow, exserted for about one fifth of their length.

Male: Colour as in female except flagellum brown, becoming dark brown apically. In structure and measurements agreeing closely with the female; antennae (Fig. 43) with scape shorter than in the female, the segments as follows: scape + radicle 72–90 (20–23); pedicel 53–61 (20–32); flagellum I 83–101 (19–20); II 85–121 (20–22); III 83–121 (20–22); IV 83–118 (20–22); V 80–115 (22–24); VI 78–111 (20–24); VII 78–105 (23–27); VIII 77–105 (23–24); IX 83–101 (23–27); X 82–94 (24–25); XI 80–101 (23–25); each flagellar segment with four longitudinal sensoriae commencing near the base and extending to just beyond the tip of each segment.

Described from 14 females (holotype and paratypes) and 23 males (allotype and paratypes) collected by D. P. Annecke in a suction trap at Pretoria, South Africa, during the summer months of 1957/1958. Holotype and allotype to be deposited in the collection of the Division of Entomology, Pretoria, and paratypes to be distributed to the following collections: USNM, BM, Dr. A. A. Ogloblin, and the present authors.

SUMMARY

The genera of the Mymaridae are reviewed following a study of European, African, North and South American, Middle Eastern and Oriental representatives of the family contained in the collections of the authors, the United States National Museum, the British Museum and the Hope Department of Entomology, Oxford, England. A preliminary key is given to those described genera and subgenera which are known to, and recognized by, the authors. New generic synonymy is introduced, two new genera are described, namely *Ptilomymar* from Mexico, and *Tanaomymar* from Trinidad. Certain poorly known genera are annotated, and the status of several genera and subgenera is altered in accordance with the authors' concepts. Discussions of certain genera, such as *Mymar* Curtis, *Anaphes* Haliday, *Patasson* Walker and *Polynema* Haliday, are given in some detail in an attempt to elucidate existing taxonomic and nomenclatural confusion. Genera which are too poorly known for inclusion, and others which are believed to be misplaced in the family, are briefly mentioned. Important taxonomic and biological references, where these occur, are selected and given for each genus, and the known distribution of each is listed briefly. The following new species are described in addition to the type species of the new genera: *Arescon fulvum*, *Parallelaptera funiculi*, *Chaetomymar lepidum*, and *Polynema brevicarinae* all from South Africa, *Anaphes alaskae* from Alaska and *Barypolynema medicae* from California. These descriptions will assist in clarifying and exemplifying the authors' ideas on the nature and value of taxonomic characters in the family.

Opsomming

DIE GENERA VAN DIE MYMARIDAE (HYMENOPTERA: CHALCIDOIDEA)

'n Oorsig word gegee van die genera en subgenera van die Mymaridae voortvloeiend uit 'n studie van Europese, Afrikaanse, Noord- en Suid-Amerikaanse, Midde- en Verre-Oosterse materiaal wat voorkom in die versamelings van die outeurs, die Nasionale Museum van die Verenigde State, die Britse Museum en die Hope Departement van Insektekunde, Oxford, Engeland. 'n Voorlopige sleutel word voorgestel tot die genera en subgenera bekend aan die outeurs wat deur hulle as geldig en nuttig beskou word. Nuwe sinonieme onder die beskrewe genera word aangegee en twee nuwe genera word beskryf, naamlik, Ptilomymar *vanaf Mexico, en* Tanaomymar *vanaf Trinidad. Beskrywende aantekenings word by sekere minder bekende genera aangebring, en die range van verskeie ander groepsname word in ooreenstemming met die menings van die outeurs verander. Sekere genera word breedvoerig behandel, bv.* Mymar *Curtis,* Anaphes *Haliday,* Patasson *Walker en* Polynema *Haliday, in 'n poging om duidelikheid te bereik wat betref die nomenklatuur en taksonomie van hierdie groepe. Genera wat te min bekend is vir insluiting by hierdie studie, asook ander wat blykbaar foutief in die literatuur onder die Mymaridae geklasifiseer is, word kortliks behandel. Belangrike biologiese en taksonomiese verwysings na die literatuur, asook die bekende verspreiding van die beskrewe spesies, word kortliks gegee. Behalwe die generotipiese spesies van die twee nuwe geslagte word die volgende nuwe spesies beskryf:* Arescon fulvum, Parallelaptera funiculi, Chaetomymar lepidum *en* Polynema brevicarinae *van Suid-Afrika,* Anaphes alaskae *van Alaska, en* Barypolynema medicae *van Kalifornië. Hierdie beskrywings sal ook help om die outeurs se gedagtes oor die aard en waarde van taksonomiese kenmerke van spesies van die Mymaridae te verduidelik.*

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The following index is provided to facilitate reference to the names of chalcidoid families and lower categories used in this article. Names in Roman type are considered to be valid names, those in italics are synonymous or otherwise invalid. The pages in bold type give the most important references to the names concerned.

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